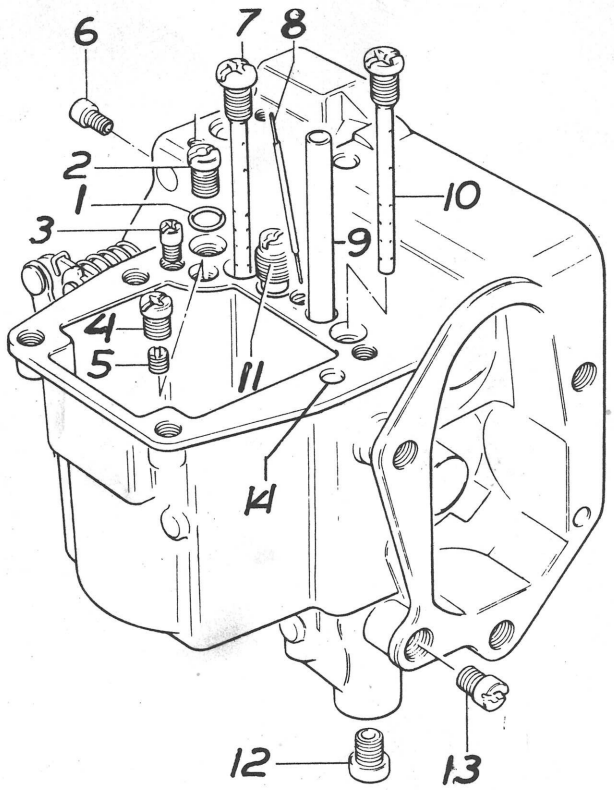
RE5 ROTARY

SERVICE SEMINAR

U. S. SUZUKI MOTOR CORPORATION

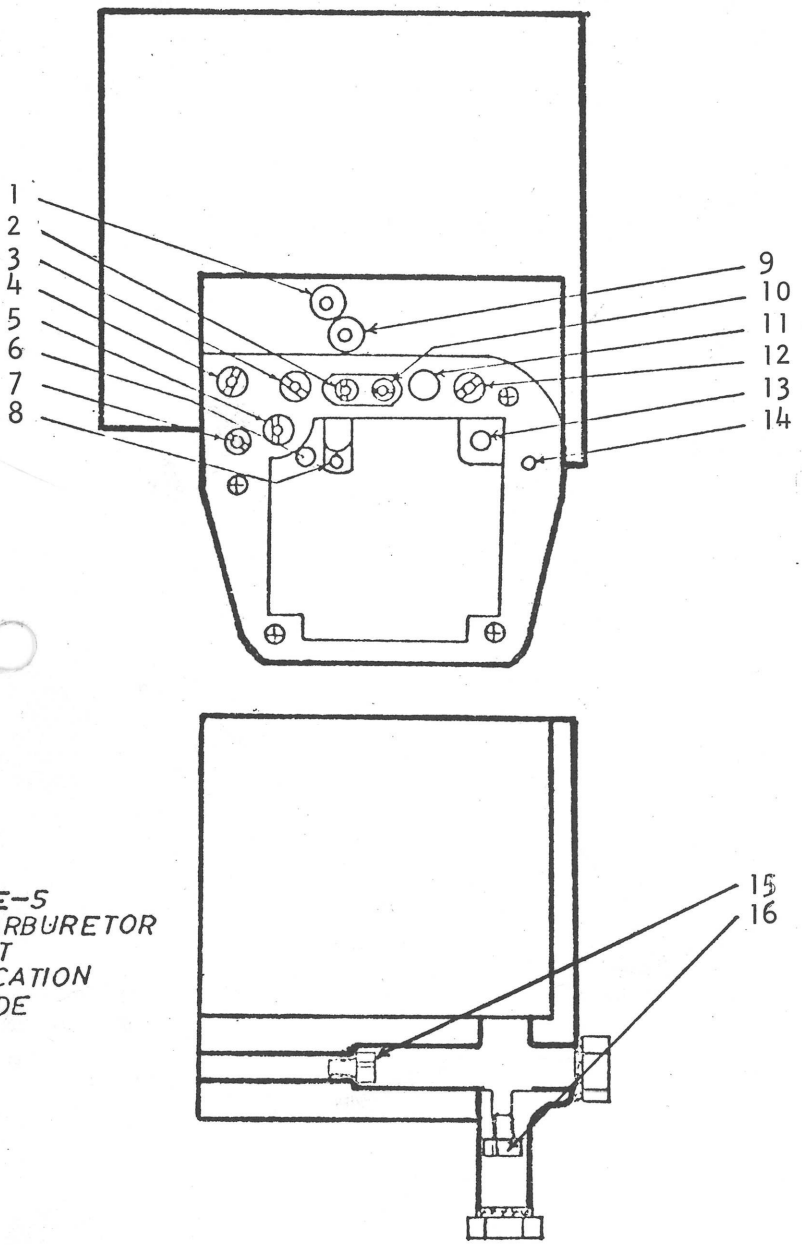
PART I
CARBURETION

RE-5 CARBURETOR JET LOCATION GUIDE



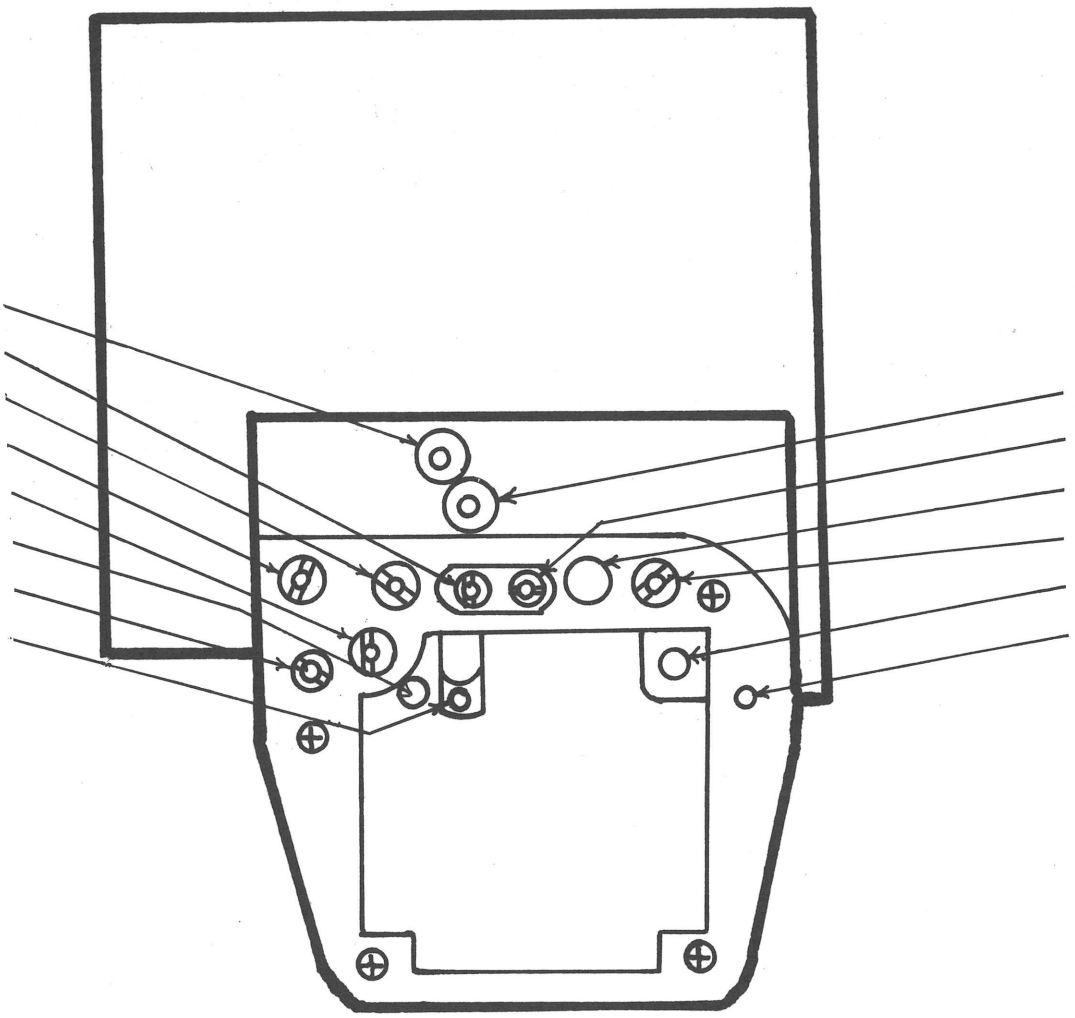
1 Primary pilot fuel jet "O" ring
2 Primary pilot fuel jet
3 Primary pilot air jet
4 Secondary pilot air jet
5 Secondary pilot fuel jet
6 Vacuum jet
7 Primary air bleed
8 Accelerator pump restrictor rod
9 Biasing pipe or anti-siphon
10 Secondary air bleed
11 Accelerator pump check valve
12 Secondary main jet
13 Primary main jet
14 Enrichment device shock absorber

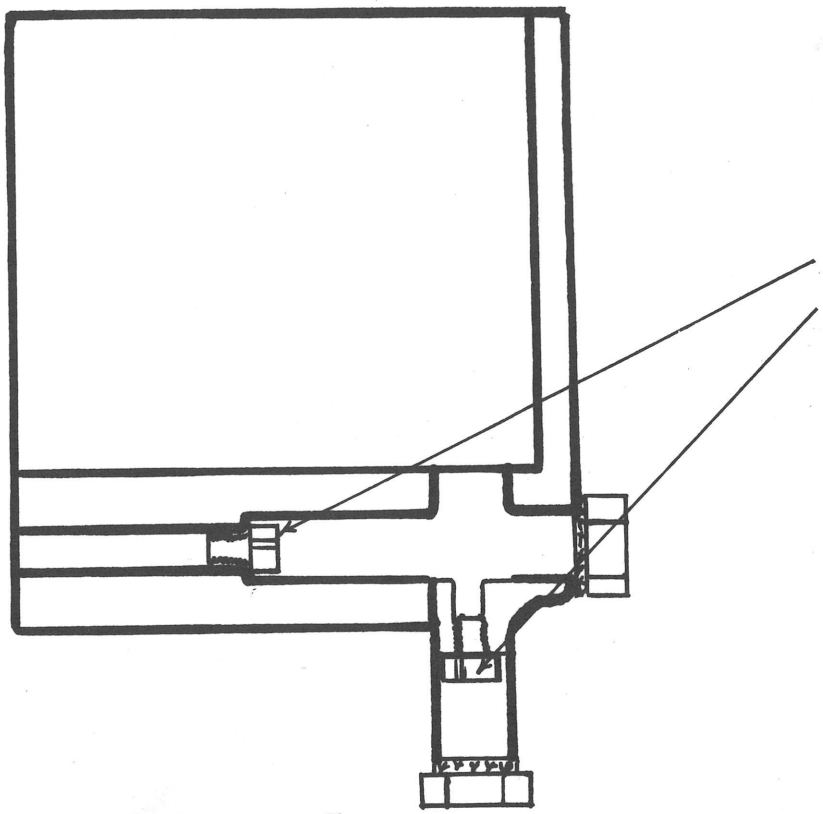
RE-5 CARBURETOR JET LOCATION GUIDE



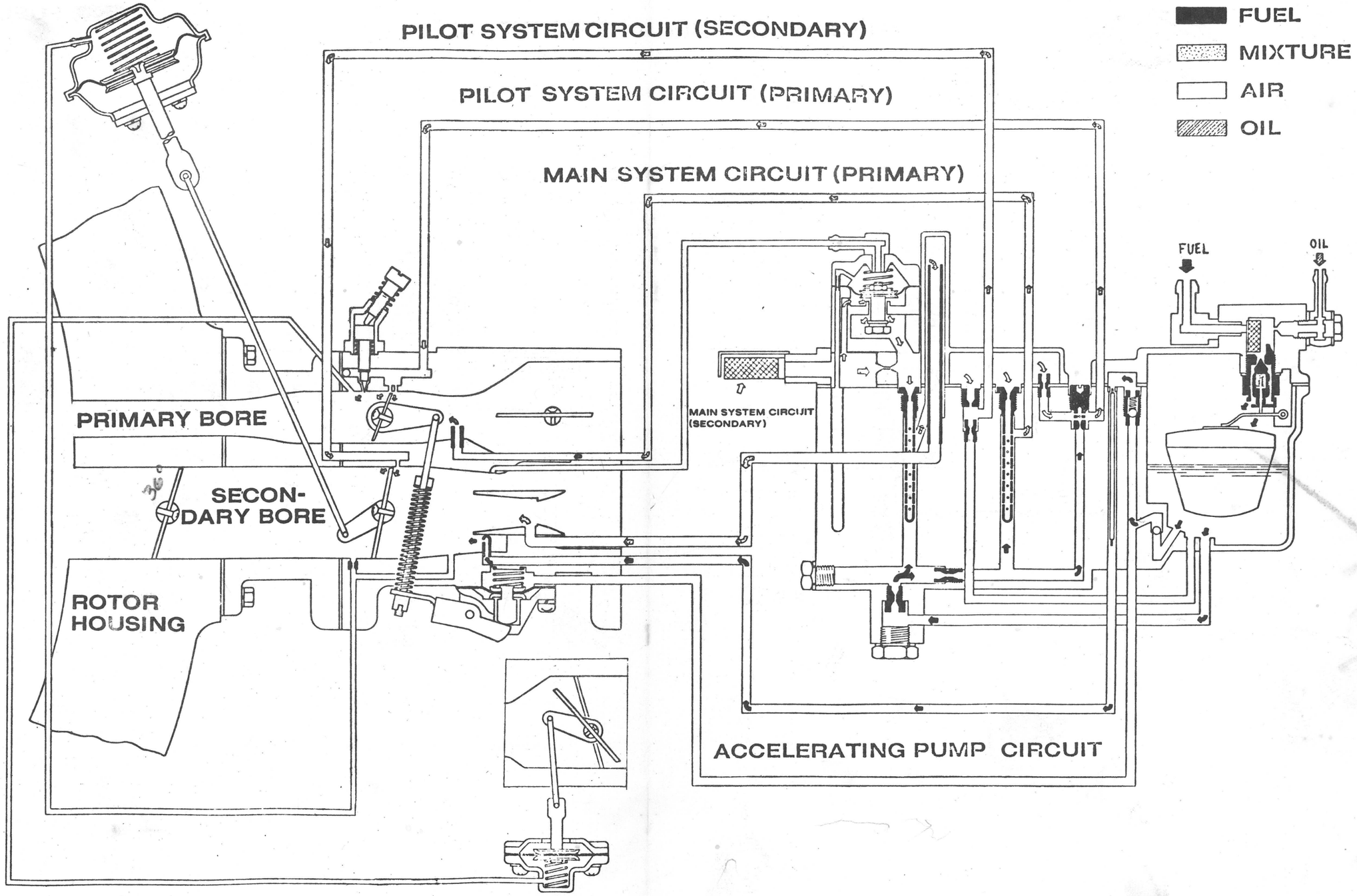
RE-5 CARBURETOR JET LOCATION GUIDE

1. Secondary throttle plate vacuum line
2. Accelerator pump check valve
3. Primary air bleed
4. Primary pilot fuel jet
5. (Top) Secondary pilot air jet (Bottom) Secondary Pilot fuel jet
6. Secondary pilot system inlet
7. Primary pilot air jet
8. Accelerator pump inlet and check valve
9. Enrichment device vacuum line
10. Accelerator pump jet and restrictor rod (This jet is non-removable)
11. Biasing pipe or anti-siphon device
12. Secondary air bleed
13. Secondary and Primary fuel inlet
14. Enrichment device shock absorber
15. Primary main jet
16. Secondary main jet





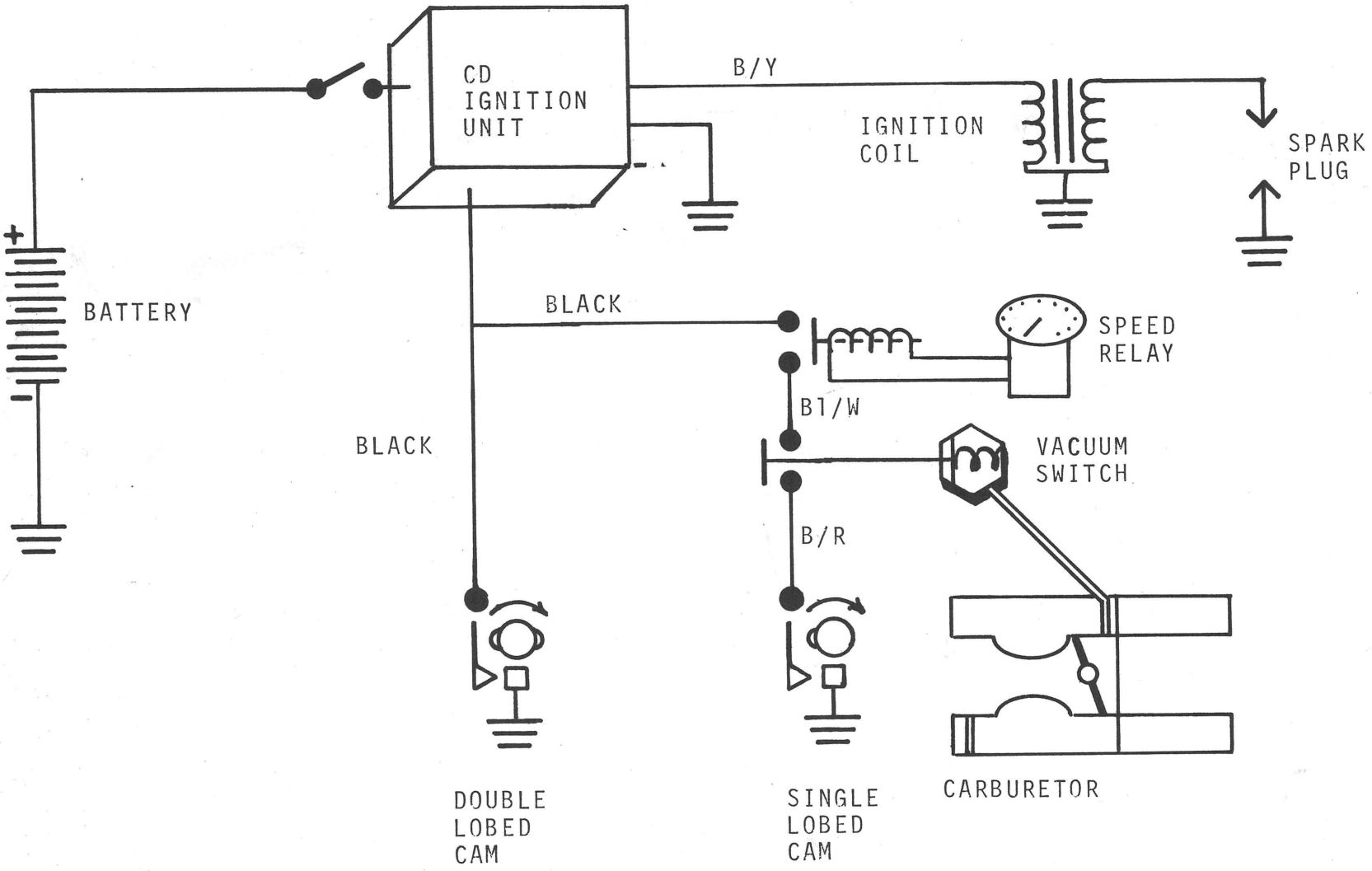
RE-5
CARBURETOR
JET
LOCATION
GUIDE


FUEL
MIXTURE
AIR
OIL
PILOT SYSTEM CIRCUIT (SECONDARY)
PILOT SYSTEM CIRCUIT (PRIMARY)
MAIN SYSTEM CIRCUIT (PRIMARY)
MAIN SYSTEM CIRCUIT (SECONDARY)
PRIMARY BORE
SECON-
DARY BORE
ROTOR
HOUSING
FUEL
OIL
ACCELERATING PUMP CIRCUIT

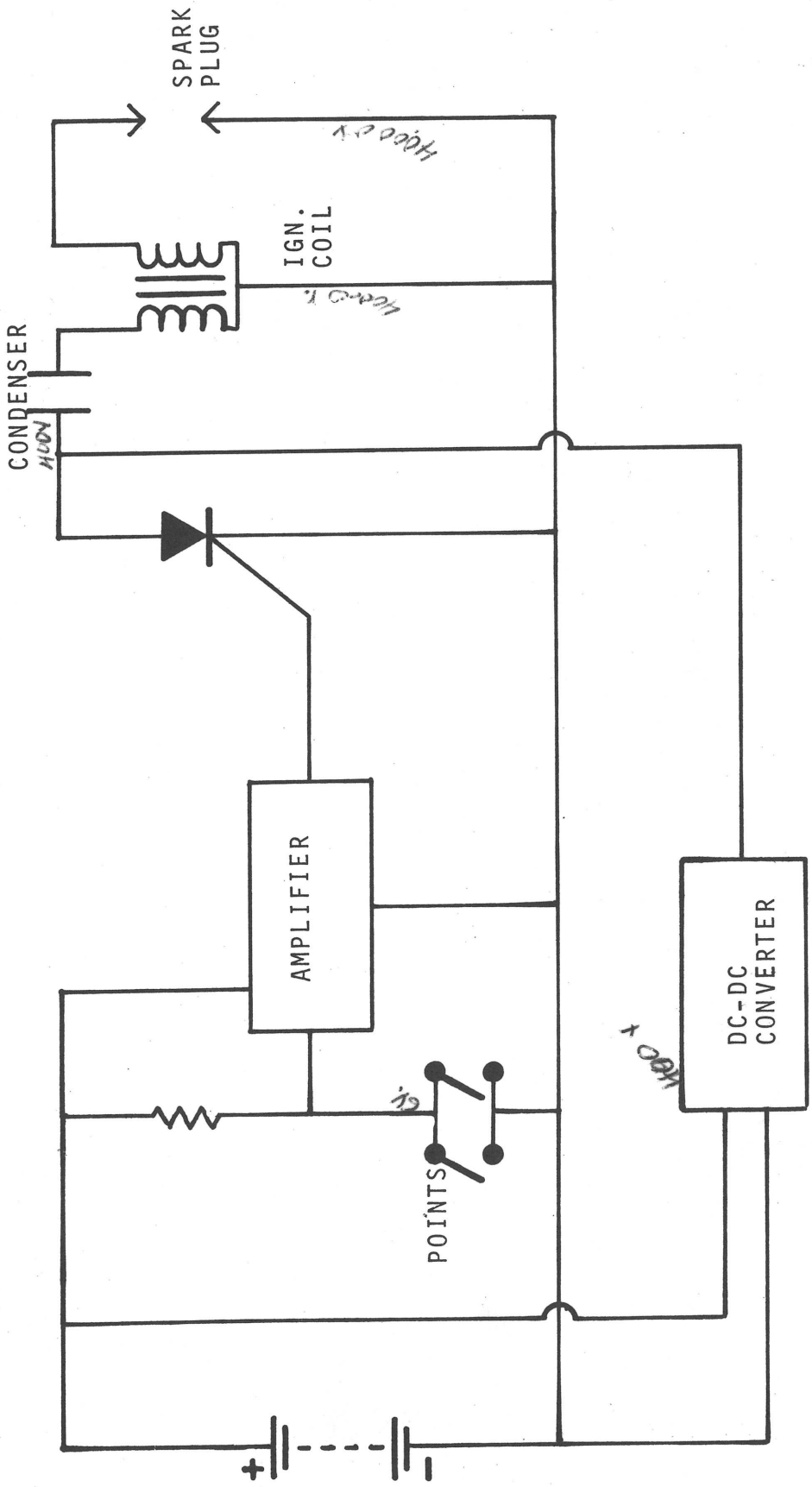
CARBURETOR

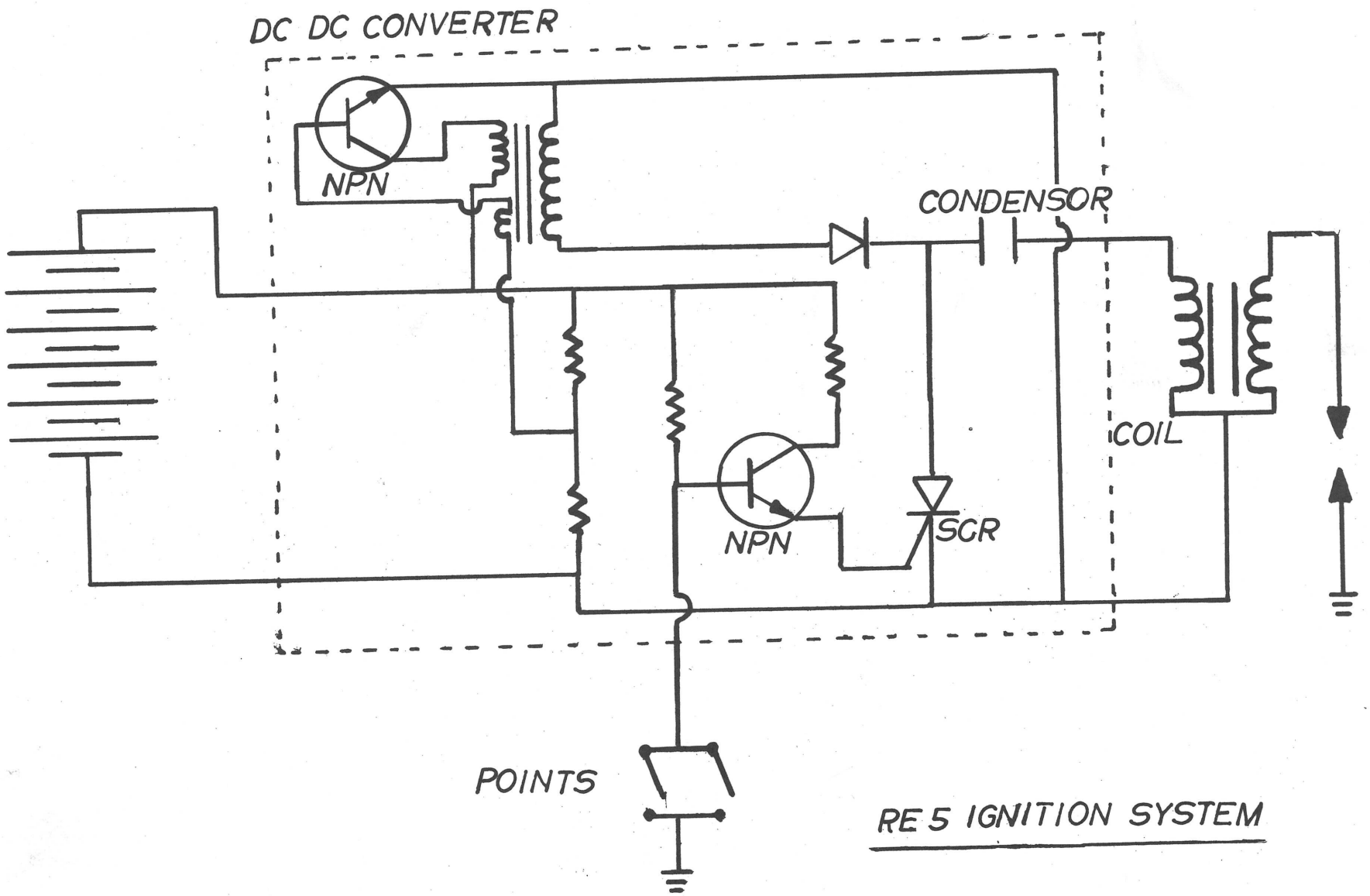
PART II
IGNITION SYSTEM THEORY

RE-5 IGNITION SYSTEM



RE-5 IGNITION SYSTEM





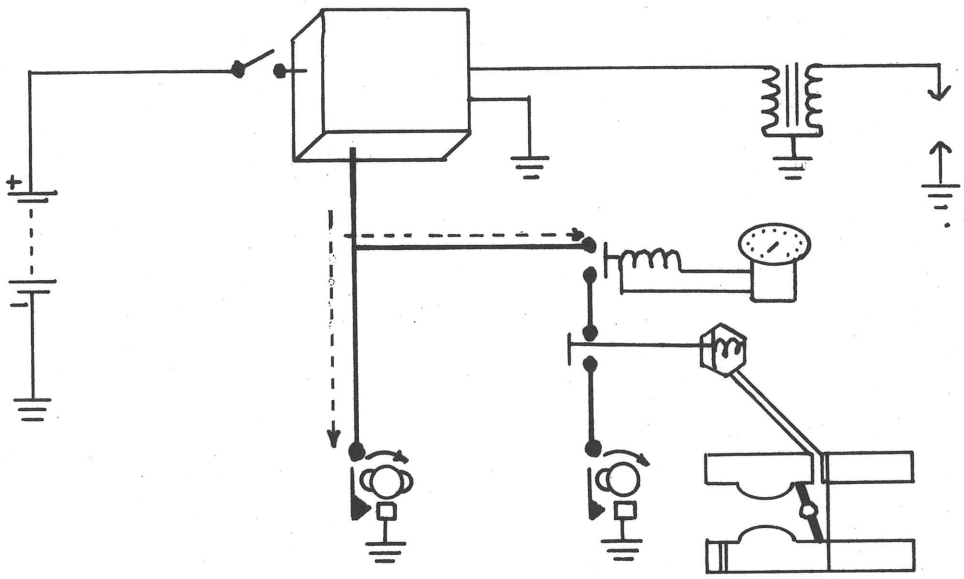
RE 5 IGNITION SYSTEM

IGNITION SYSTEM

BELOW 1,700 RPM

LOW MANIFOLD VACUUM

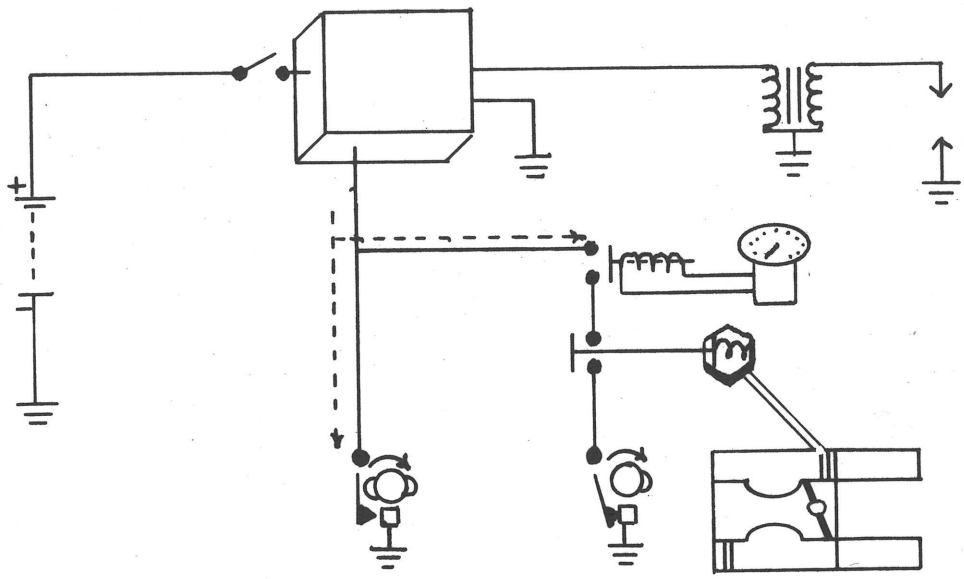
S.L.C. POINTS OPEN



BELOW 1,700 RPM

LOW MANIFOLD VACUUM

S.L.C. POINTS CLOSED

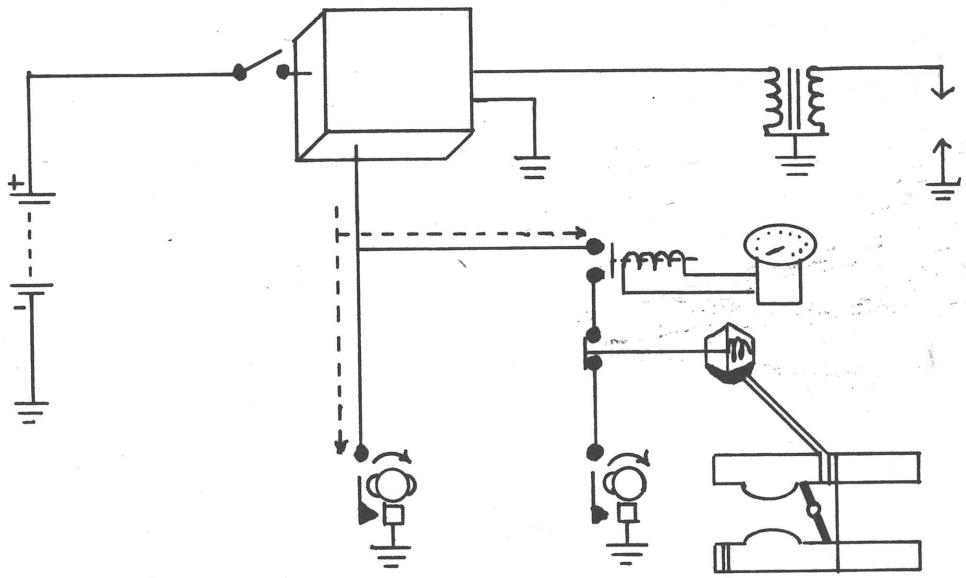


IGNITION SYSTEM

BELOW 1,700 RPM

HIGH MANIFOLD VACUUM

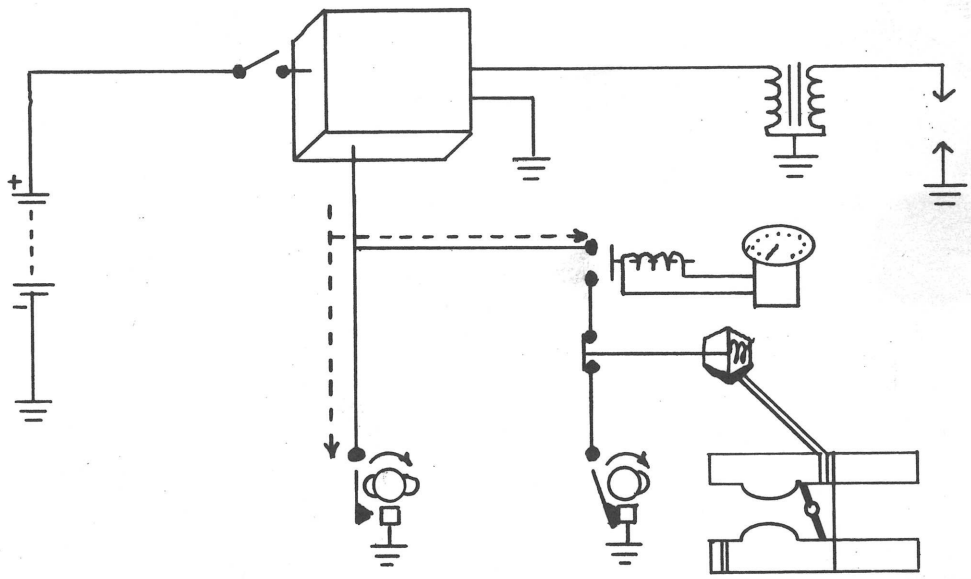
S.L.C. POINTS <u>OPEN</u>



BELOW 1,700 RPM

HIGH MANIFOLD VACUUM

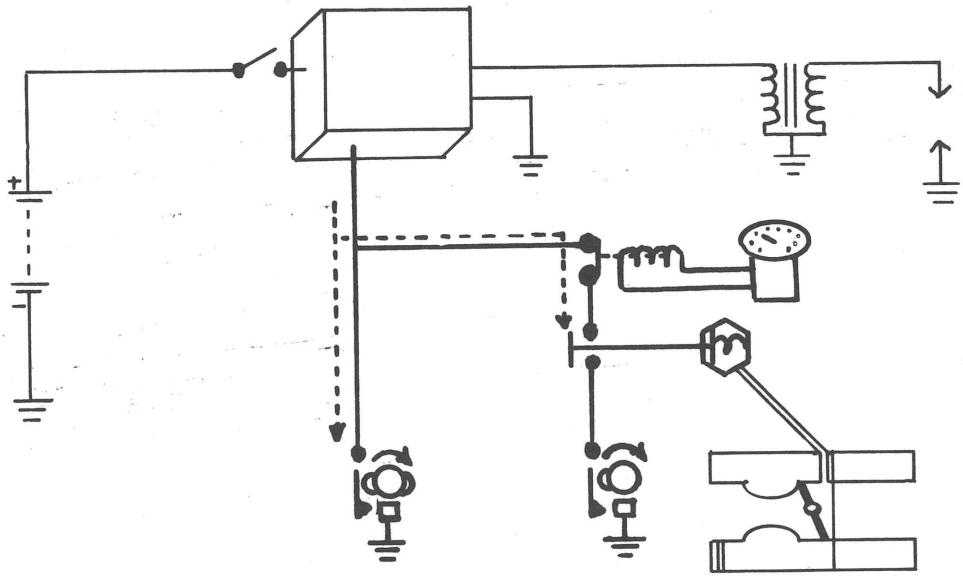
S.L.C. POINTS <u>CLOSED</u>



ABOVE 1,700 RPM

LOW MANIFOLD VACUUM

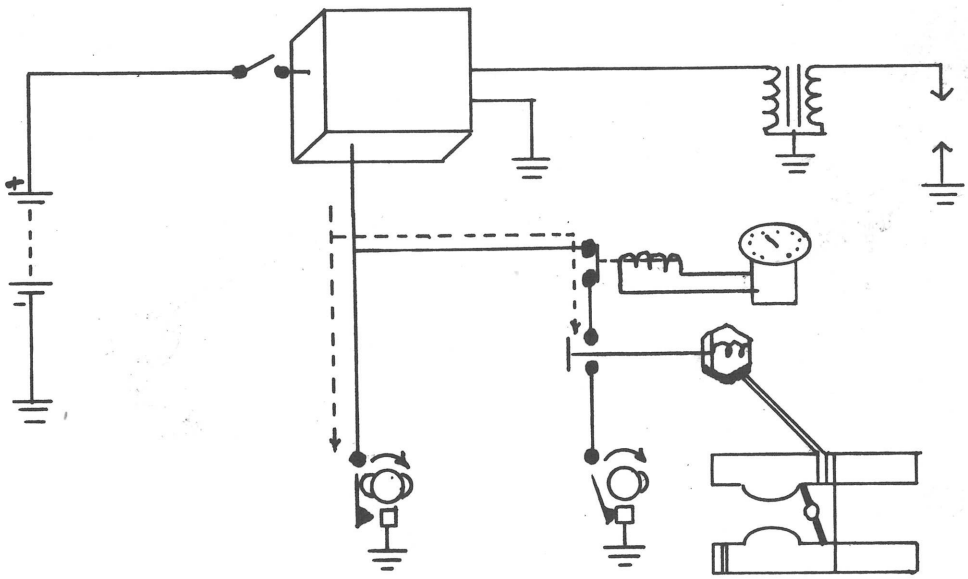
S.L.C. POINTS OPEN



ABOVE 1,700 RPM

LOW MANIFOLD VACUUM

S.L.C. POINTS CLOSED

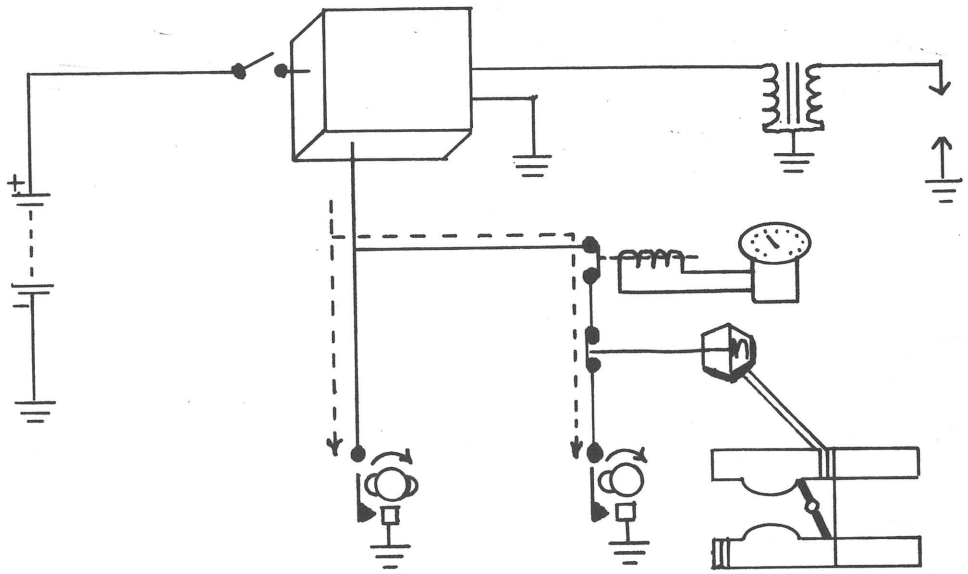


IGNITION SYSTEM

ABOVE 1,700 RPM

HIGH MANIFOLD VACUUM

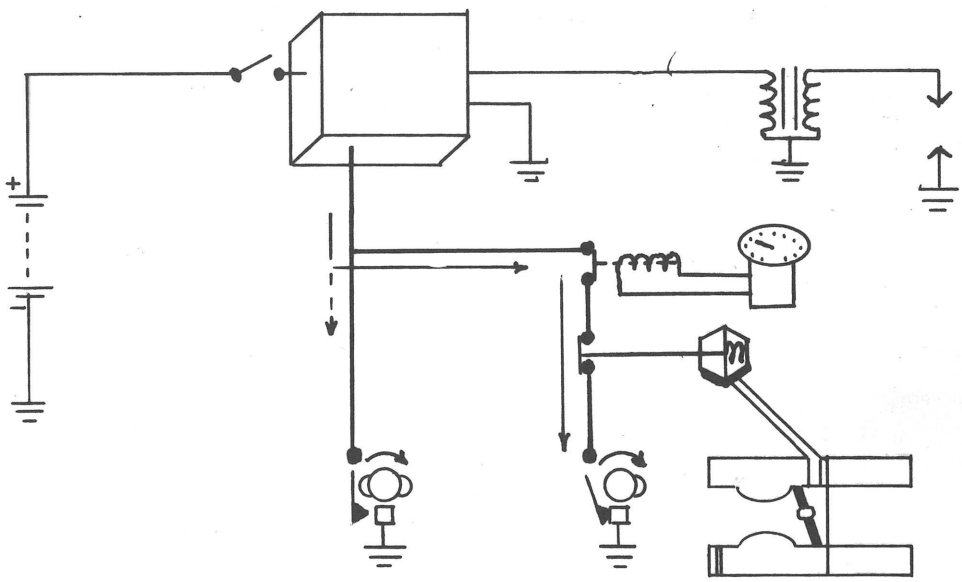
S.L.C. POINTS OPEN



ABOVE 1,700 RPM

HIGH MANIFOLD VACUUM

S.L.C. POINTS CLOSED



PART III

IGNITION SYSTEM BENCH CHECK

VACUUM SWITCH
(Bench Check)

1. For this test take a pocket-tester and set it to the R X 1 position of the ohm scale.

   NOTE: BE SURE TO ZERO THE POCKET-TESTER

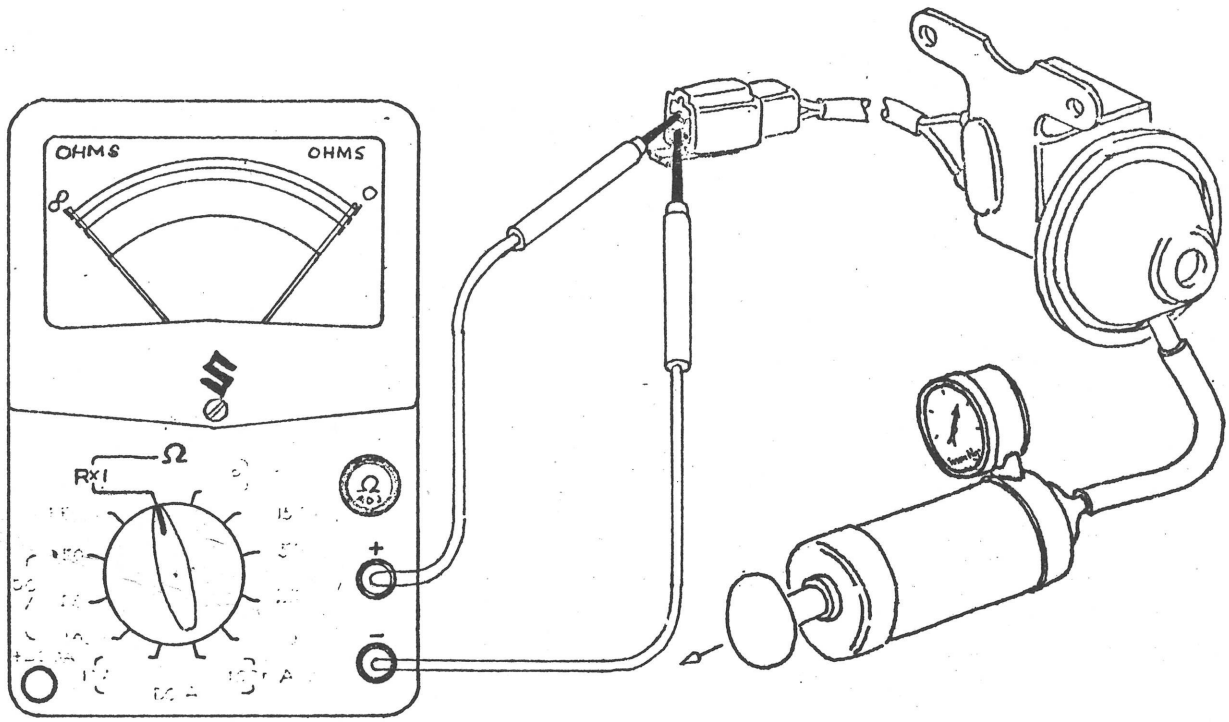
2. Connect the red (positive) lead of the pocket-tester to the blue/white wire in the switch plug receptacle.

3. Connect the black (negative) lead of the pocket-tester to the black/red wire in the switch plug receptacle.

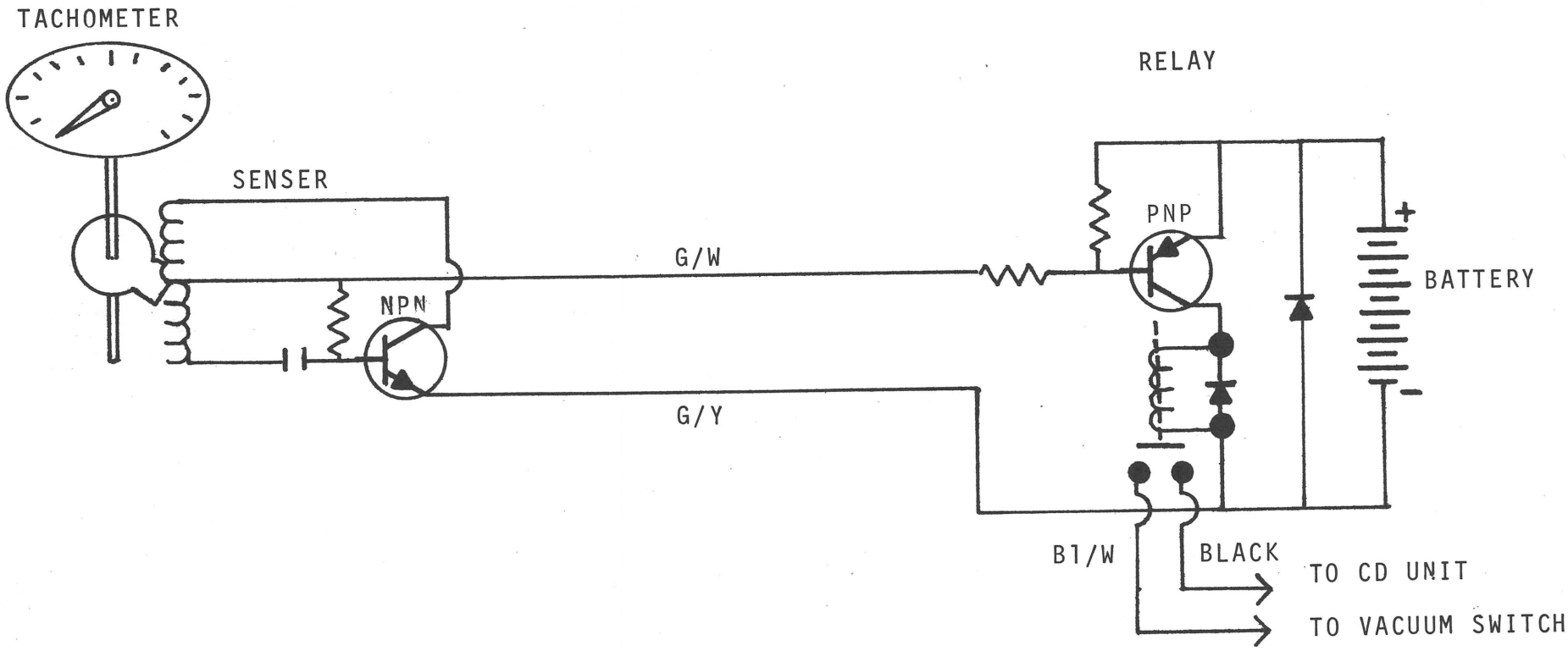
4. The readings on the pocket-tester should be as follows:

   With a vacuum under 350 m/m H.G., infinite ohms resistance

   With a vacuum over 355 m/m H.G., zero ohms resistance.



SPEED RELAY


TACHOMETER
SENSER
NPN
G/W
G/Y
RELAY
PNP
+
BATTERY
-
B1/W
BLACK
TO CD UNIT
TO VACUUM SWITCH

SPEED RELAY
(Bench Check)

1. For this test you will need a pocket-tester set to the R X 1 position of the ohm scale, a 600 ohm resistor and a 12V battery.

   NOTE: BE SURE TO ZERO THE POCKET-TESTER

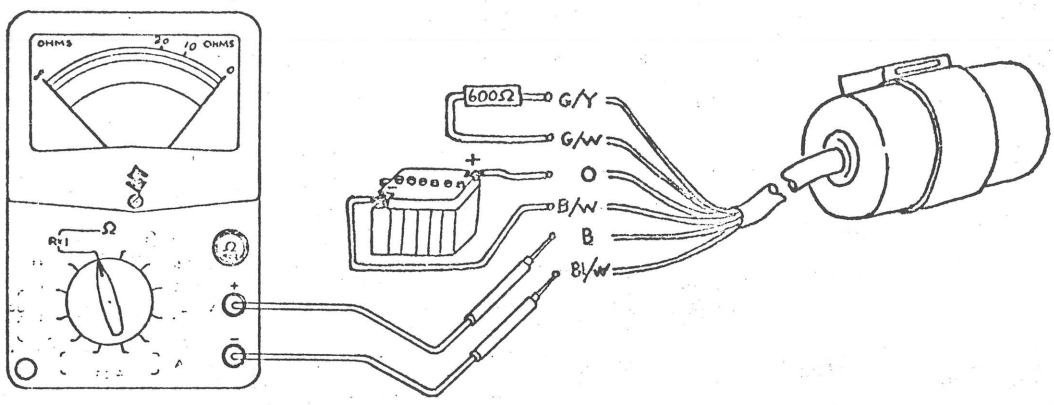
2. Connect the pocket-tester red (positive) lead to the black wire in the speed relay plug receptacle.

3. At the same time connect the black (negative) lead of the pocket-tester to the blue/white wire in the relay plug receptacle.

4. Then connect the 600 ohm resistor between the green/yellow and green/white wires in the relay plug receptacle.

5. Connect the black/white wire in the relay plug receptacle to the battery negative terminal.

6. Connect the orange wire in the relay plug receptacle to the battery positive terminal. (The 600 ohm resistor in the circuit represents an engine speed under 1,700 R.P.M.) With the 600 ohm resistor in the circuit the reading on the pocket-tester should be of infinite resistance. With the 600 ohm resistor <u>out</u> of the curcuit the reading should be <u>zero</u> resistance.



HIGH TENSION COIL
(Bench Check)

1. For this test you will need a pocket-tester set to the R X 1 position of the ohm scale.

   NOTE: BE SURE TO ZERO THE POCKET-TESTER

2. Connect the red (positive) lead of the pocket-tester to the black/yellow wire of the H.T. coil.

3. Connect the black (negative) lead of the pocket-tester to the coil mounting bracket.

4. The reading on the pocket-tester should be 1.0 ±.5 ohms resistance.

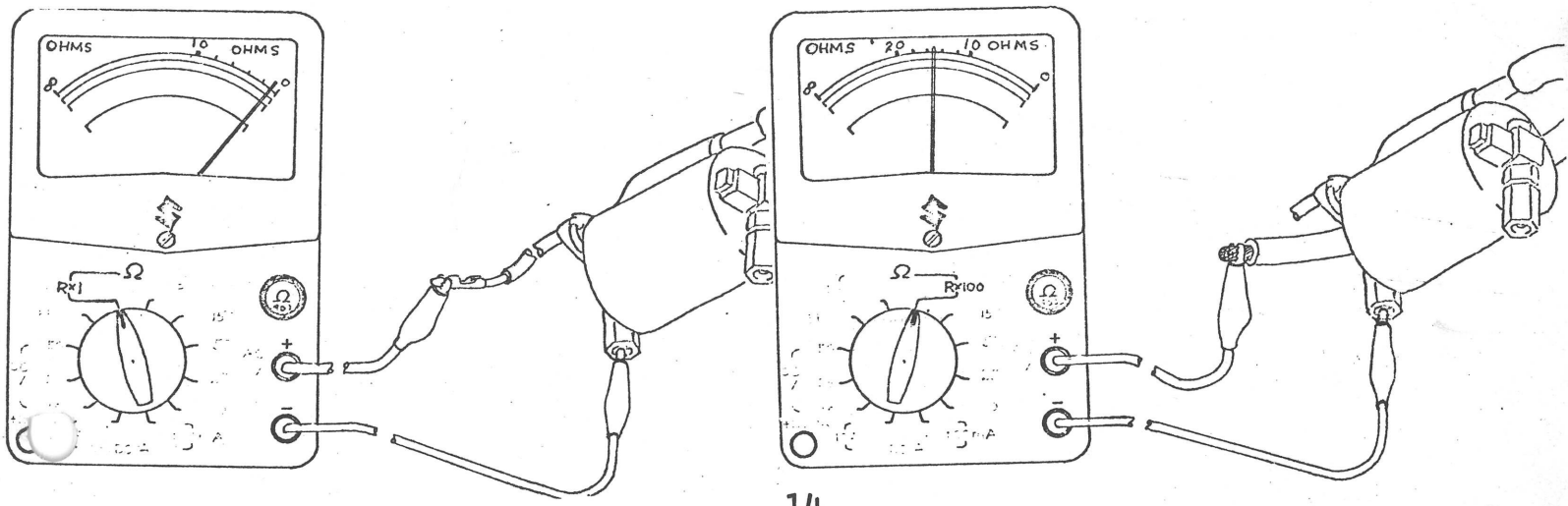
5. To check the H.T. coil secondary windings, set the pocket-tester to the R X 100 position of the ohm scale.

   NOTE: BE SURE TO ZERO THE POCKET-TESTER

6. Connect the red (positive) lead of the pocket-tester to the large black (H.T.) wire of the coil. Test without spark plug cap.

7. Connect the black (negative) lead of the pocket-tester to the coil mounting bracket. The reading on the pocket-tester should be 1,400.0 ± 100 ohms resistance.

8. To check the spark plug cap for proper resistance set your pocket-tester to the R X 100 position of the ohm scale and connect the red (positive) lead of the pocket-tester to H.T. wire end of the spark plug cap. Connect the black (negative) lead of the pocket-tester to the spark plug end of the spark plug cap. The reading on the pocket-tester should be 9,000.0 ± 1,000.0 ohms resistance.



C.D.I. (Black Box) UNIT
(Bench Check)

1. For this test you will need an electro-tester, a C.D.I. high tension coil, and a 12V battery.

2. Connect the black/yellow wire of the high tension coil to the black/yellow wire in the C.D.I. box plug receptacle.

3. Connect the red (+) high tension lead of the electro-tester to the black high tension wire of the coil.

4. Connect the black (-) high tension lead of the electro-tester to the coil mounting bracket.

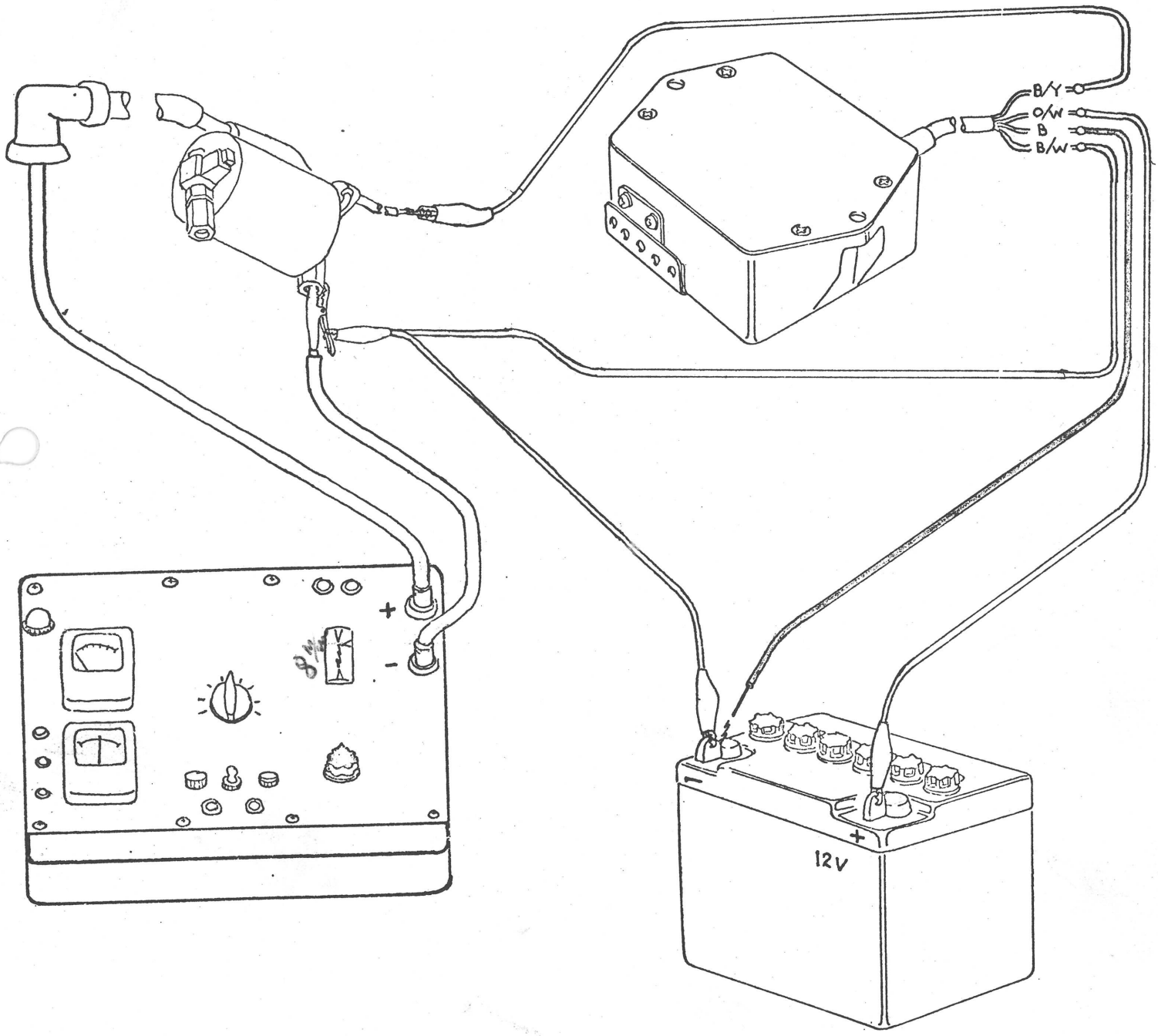
5. Be sure to ground the coil mounting bracket to the battery negative terminal.

6. Connect the black/white wire in the C.D.I. box plug receptacle to the battery negative terminal.

7. Connect the orange/white wire in the C.D.I. box plug receptacle to the battery positive terminal. If the circuit is connected correctly a high pitched buzz or whine will emanate from the C.D.I. black box when the orange wire is connected.

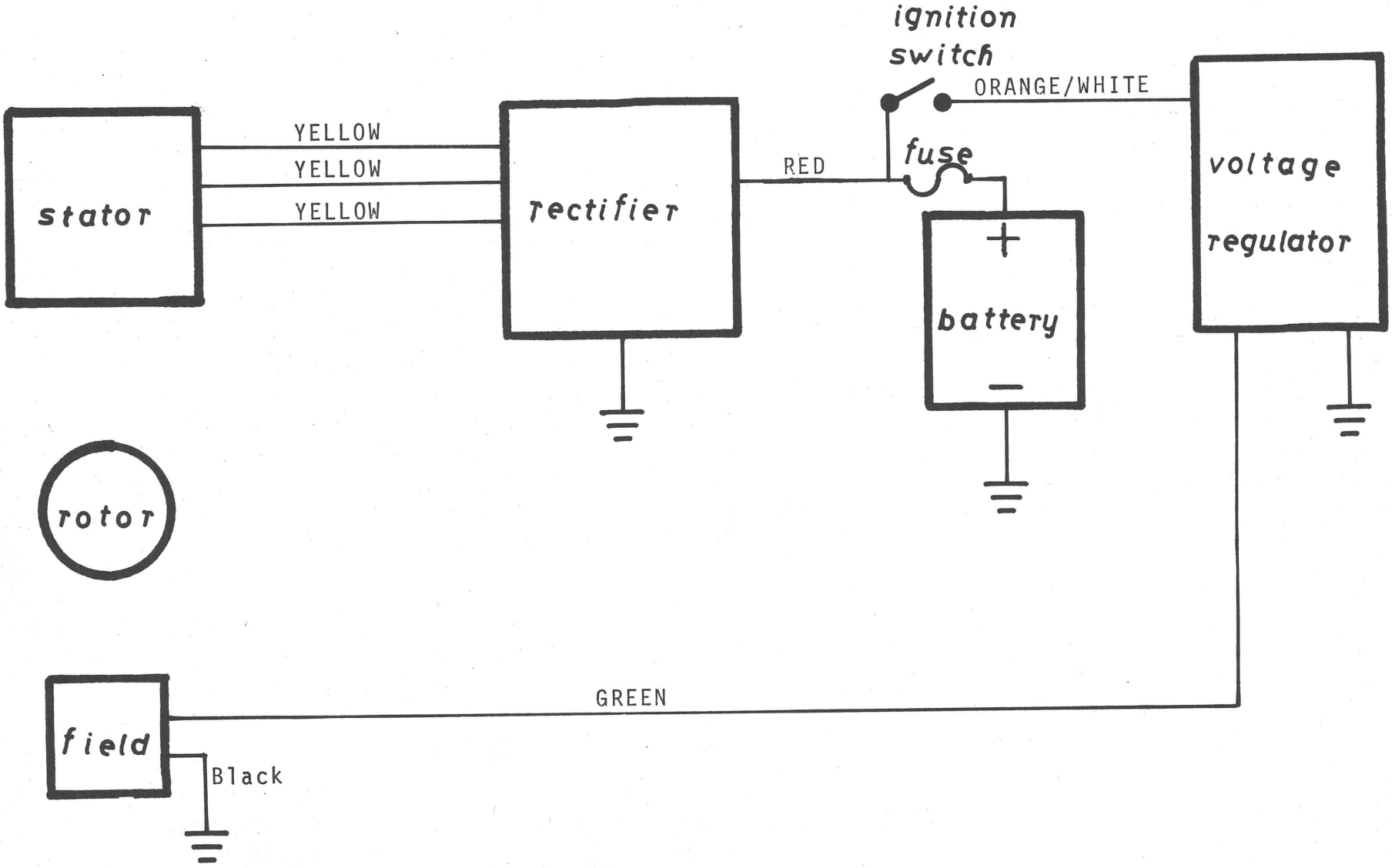
   When you hear the buzzing sound from the C.D.I. box, take the black wire in the C.D.I. box plug receptacle and touch it intermittently to the battery negative terminal. If the C.D.I. box is working properly a spark will jump across the gap in the electro-tester.

C.D.I. (Black Box) UNIT
(Bench Check)

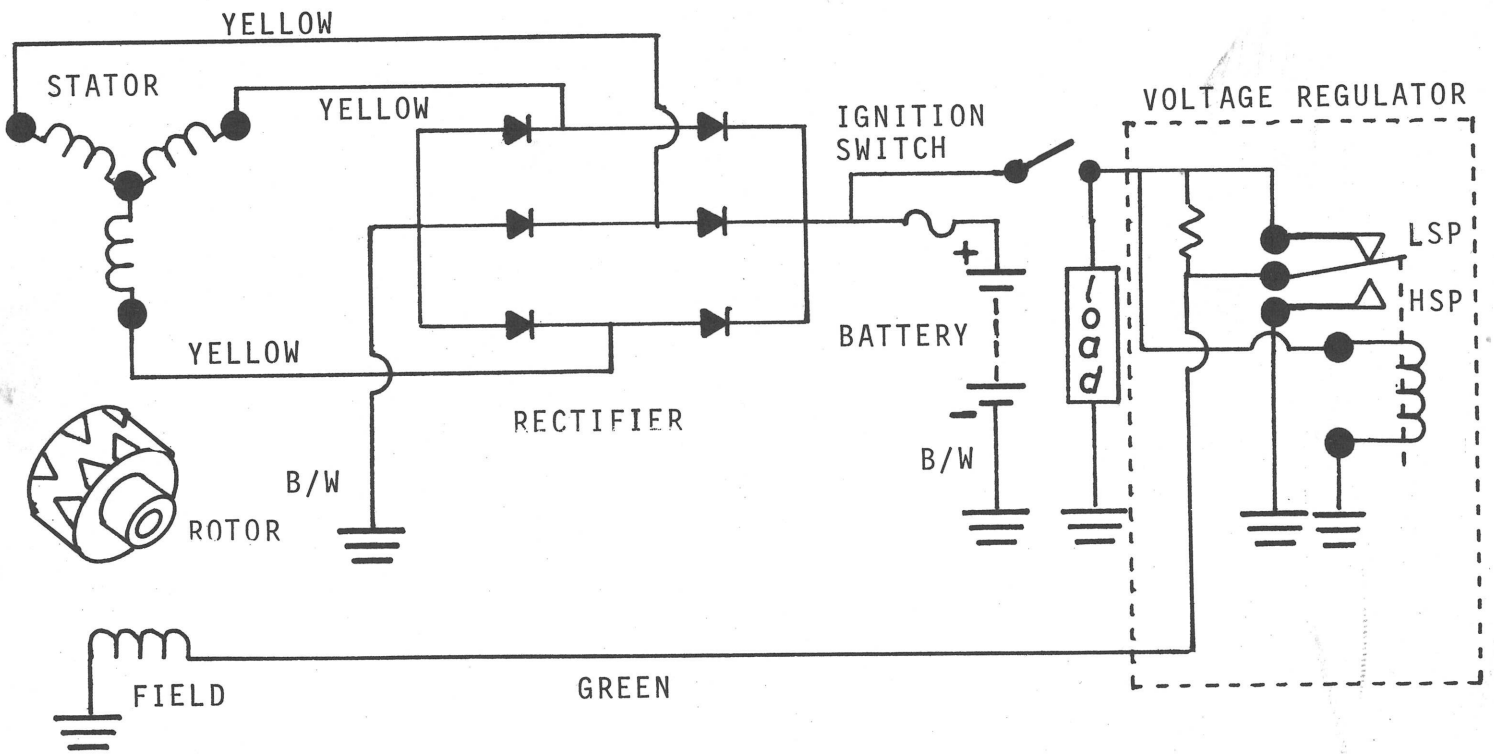


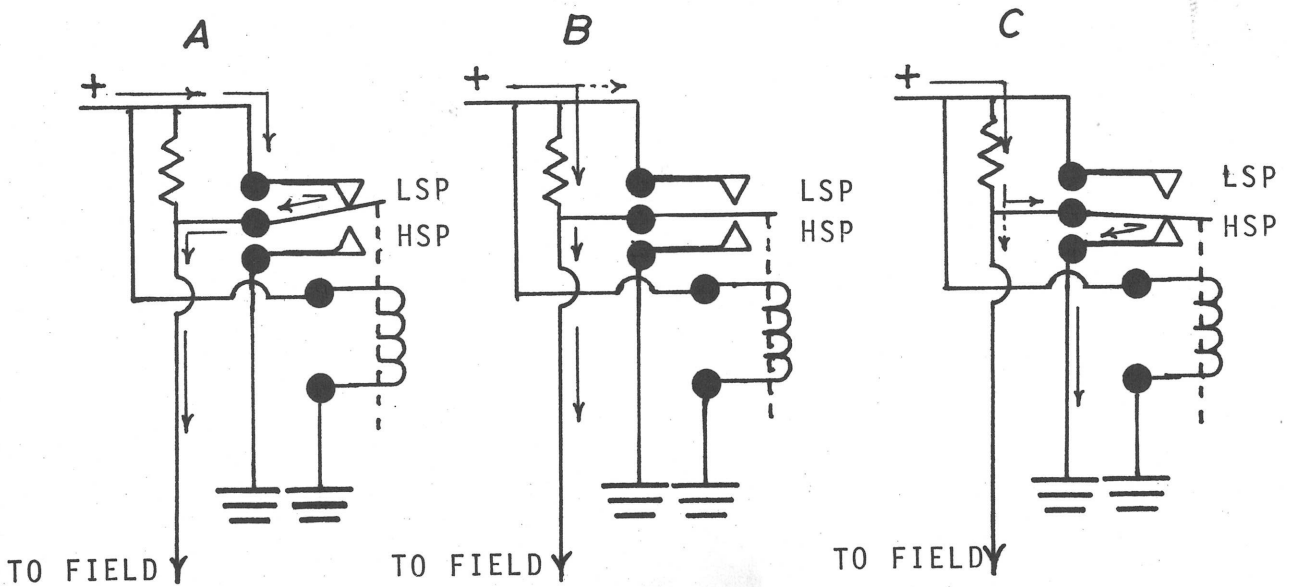
PART IV
CHARGING SYSTEM BENCH CHECK

RE-5 CHARGING SYSTEM



RE-5 CHARGING SYSTEM





FIELD COIL UNIT
(Bench Check)

1. For this test take a pocket-tester and set it to the R X 1 position of the ohm scale.

   NOTE: BE SURE TO ZERO THE POCKET-TESTER

2. Connect the red (positive) lead of the pocket-tester to the green wire in the field coil plug receptacle.

3. Connect the black (negative) lead of the pocket-tester to the black wire in the field coil plug receptacle.

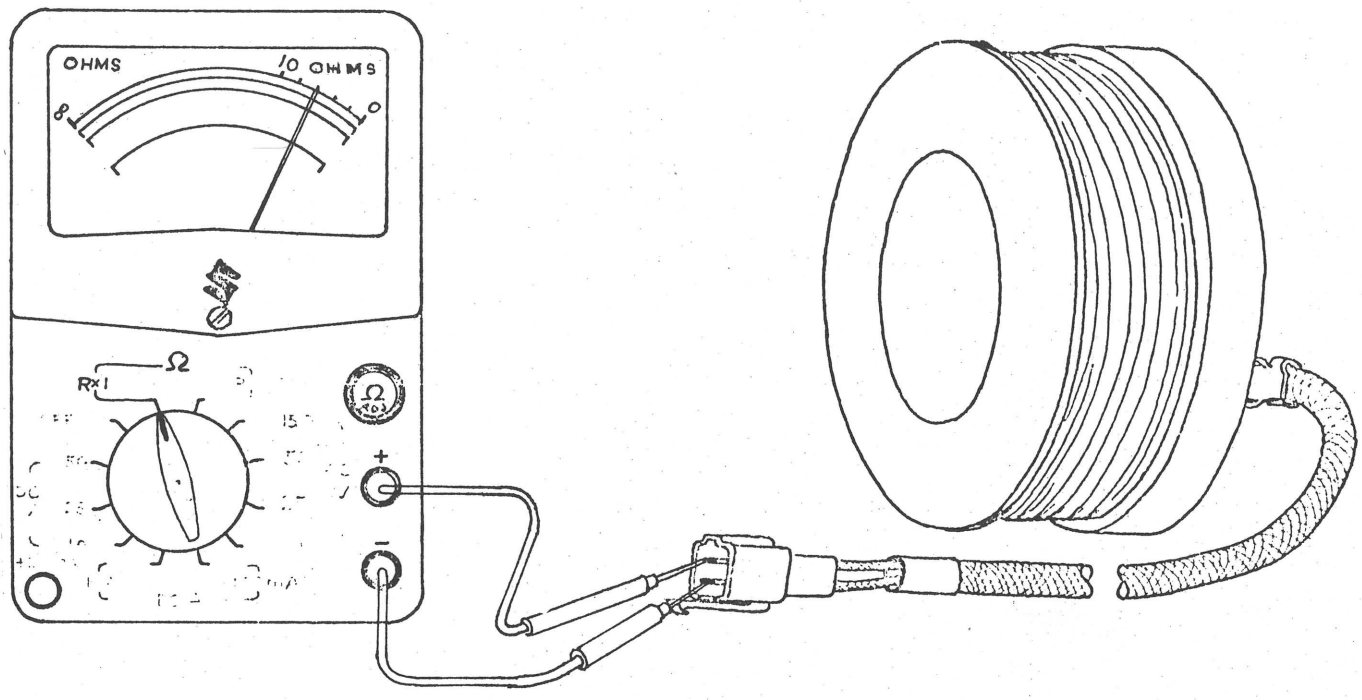
4. The reading on the pocket-tester should be 6.0 ± 1 ohms resistance.

5. For the next test set the pocket-tester to the R X 100 position of the ohm scale.

   NOTE: BE SURE TO ZERO THE POCKET-TESTER

6. For the next check connect the black (negative) lead of the pocket-tester to the field coil unit base.

7. Connect the red (positive) lead of the pocket-tester first to the green wire in the field coil plug receptacle, and then to the black wire in the plug receptacle. Both readings should be infinite ohms resistance.



STATOR ASSEMBLY
(Bench Check)

1. For this test take a pocket-tester and set it to the R X 1 position of the ohm scale.

   NOTE: BE SURE TO ZERO THE POCKET-TESTER

2. Connect the black (negative) lead of the pocket-tester to any of the three yellow wires in the stator plug receptacle.

3. Connect the red (positive) lead of the pocket-tester to any of the remaining yellow wires in the stator plug receptacle.

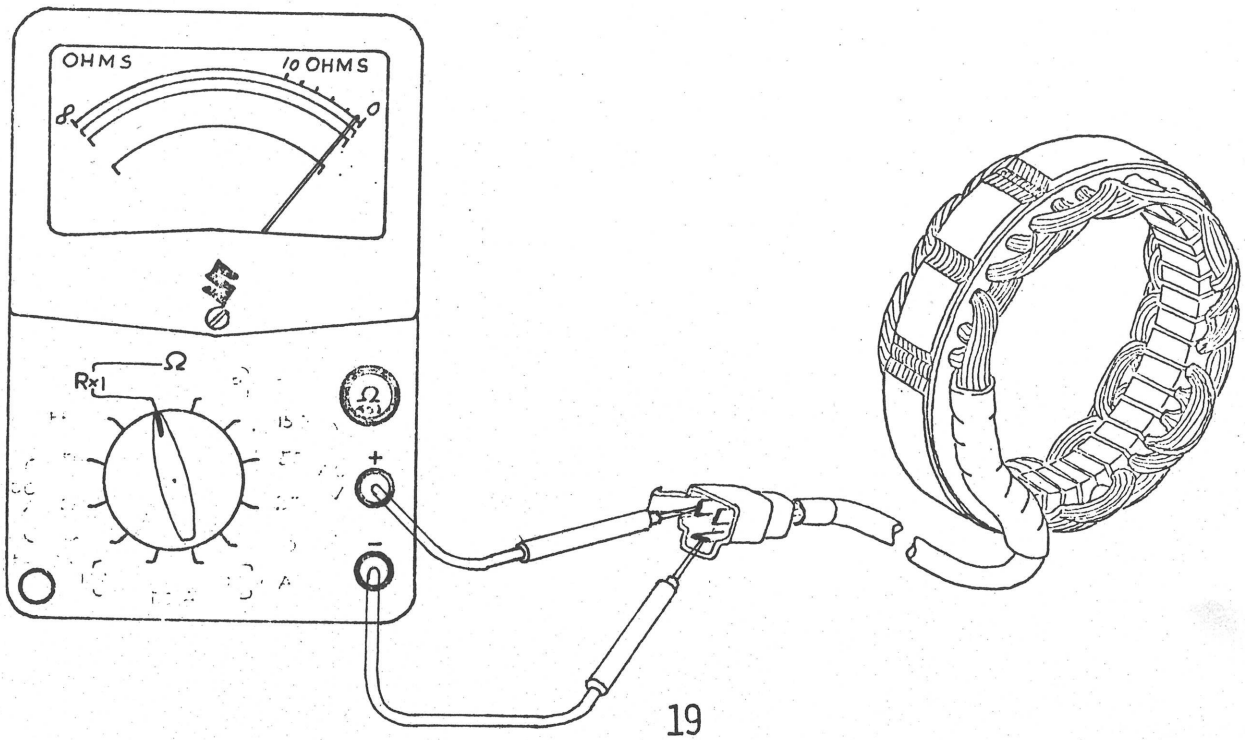
4. Repeat the procedure with all three yellow wires in the stator plug receptacle until all combinations are tried. The readings on the pocket-tester should all be 0.7 ± .1 ohms resistance.

5. To check for a grounded condition in the stator windings take a pocket-tester and set it to the R X 100 position of the ohm scale.

   NOTE: BE SURE TO ZERO THE POCKET-TESTER

6. Connect the black (negative) lead of the pocket-tester to the stator assembly base.

7. With the black (negative) lead of the pocket-tester still connected to the stator assembly base, connect the red (positive) lead of the pocket-tester to any of the yellow wires in the stator plug receptacle. Repeat the procedure with all three yellow wires in the stator plug receptacle until all are checked. Reading on the pocket-tester should all be infinite ohm resistance.



FIELD COIL AND STATOR WINDING
(Insulation Bench Check)

1. For this test you will need an electro-tester and a 12V battery. Set the electro-tester switch to the insulation (mega-ohm) position.

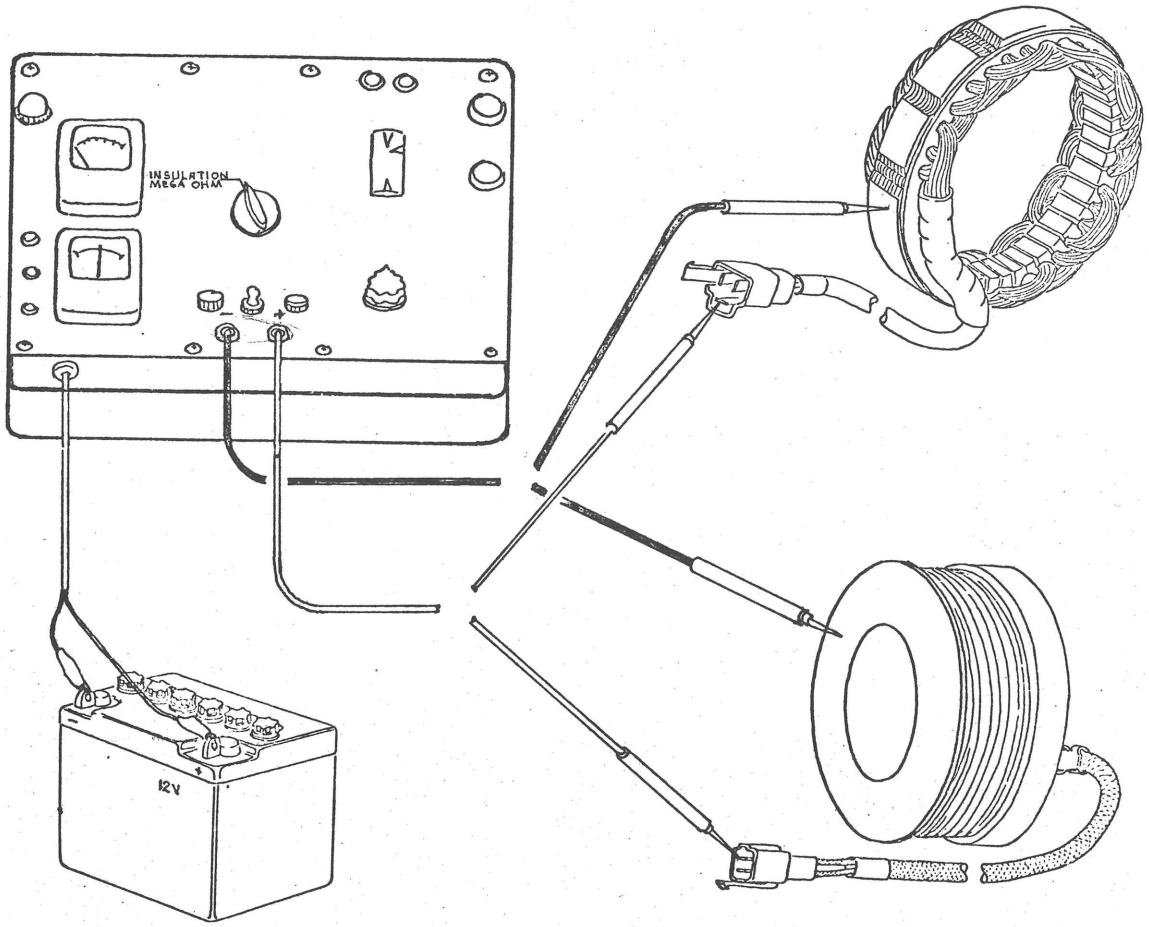
2. Connect 12V battery to electro-tester power source leads.

   NOTE: BE SURE TO ZERO THE ELECTRO-TESTER

3. Connect the red (positive) test terminal lead to the base of the field coil or stator winding (depending on which unit you are checking).

4. Connect the black (negative) test terminal lead to any of the wires in plug receptacle. Check each wire one at a time.

5. The readins on the electro-tester should be infinite ohms resistance.



RECTIFIER UNIT
(Bench Check)

1. For this test take your pocket-tester and set it to the R X 1 position of the ohm scale.

   NOTE: BE SURE TO ZERO THE POCKET-TESTER

2. Connect the red (positive) lead of the pocket-tester to the red wire in the rectifier plug receptacle.

3. Connect the black (negative) lead of the pocket-tester to the remaining white, yellow, and brown wires in the rectifier plug receptacle respectively.

   The reading from all three wires should be 22.0 $\pm$ 5 ohms resistance.

4. Next connect the black (negative) lead of the pocket-tester to the red wire in the rectifier plug receptacle.

5. Connect the red (positive) lead of the pocket-tester to the white, yellow and brown wire in the rectifier plug receptacle respectively.

   The reading from all three wires should be infinite ohms resistance.

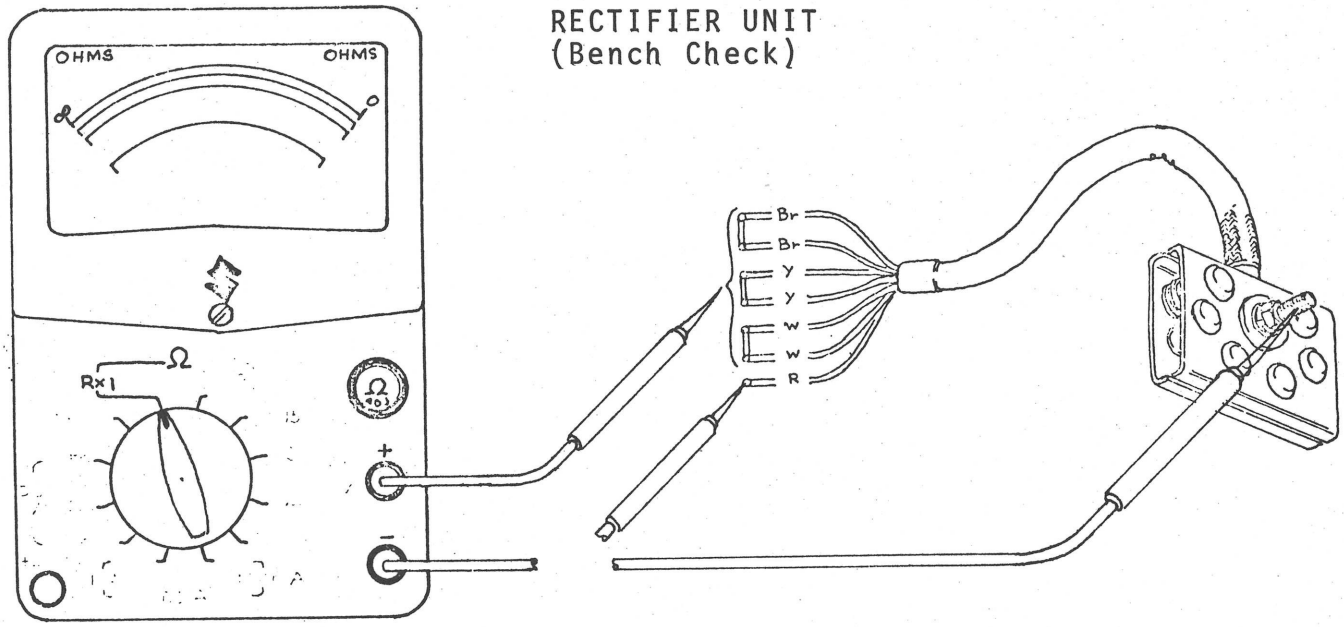
6. Next connect the black (negative) lead of the pocket-tester to rectifier mounting post.

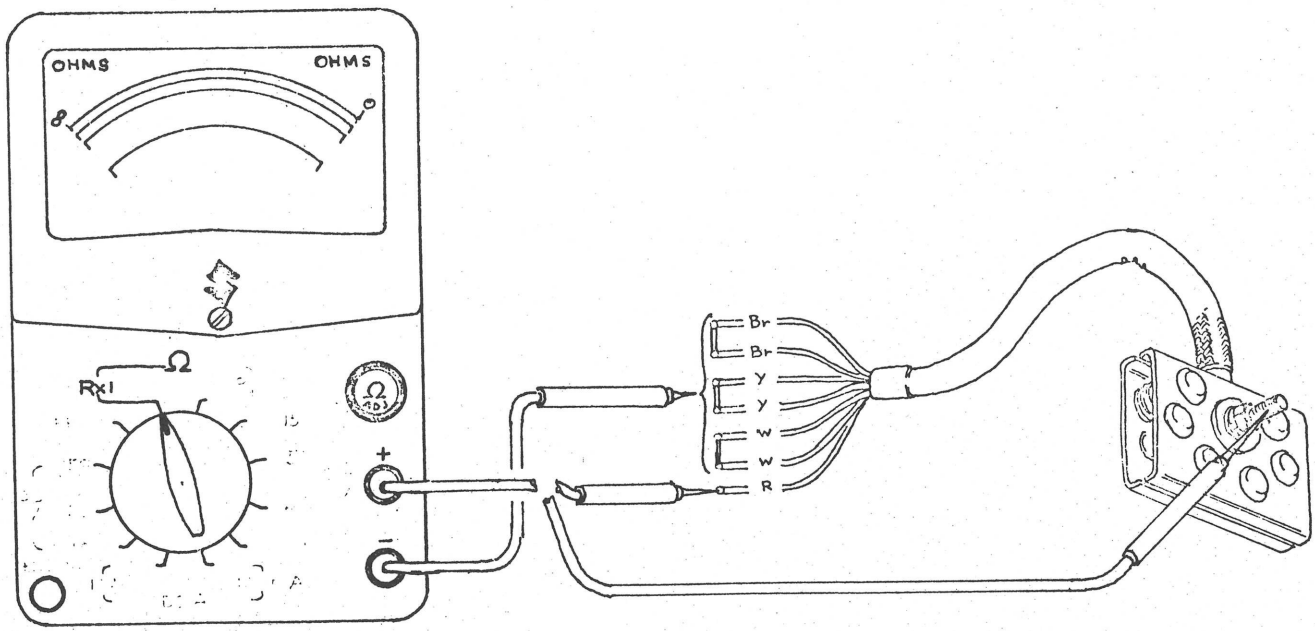
7. Connect the red (positive) lead of the pocket-tester to the white, yellow and brown wires in the rectifier plug receptacle respectively. The readings from all three wires should be 22.0 $\pm$ 5 ohms resistance.

8. Next connect the red (positive) lead of the pocket-tester to the rectifier mounting post.

9. Connect the black (negative) lead of the pocket-tester to the white, yellow and brown wires in the rectifier plug receptacle respectively. The readings from all three wires should be infinite ohms resistance.

RECTIFIER UNIT
(Bench Check)





VOLTAGE REGULATOR
(Bench Check)

1. For this test take a pocket-tester and set it on the R X 1 position of the ohm scale.

   NOTE: BE SURE TO ZERO THE POCKET-TESTER

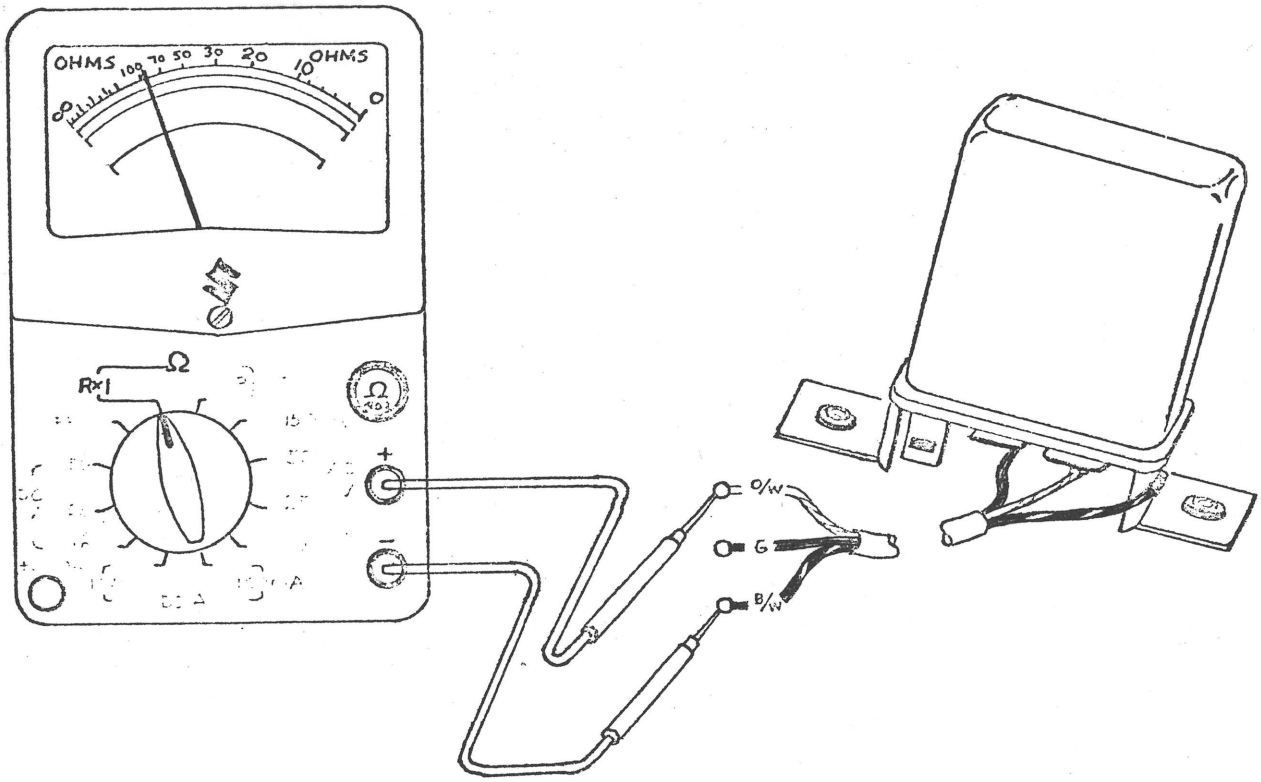
2. Connect the black (negative) lead of the pocket-tester to the black/white wire in the voltage regulator plug receptacle.

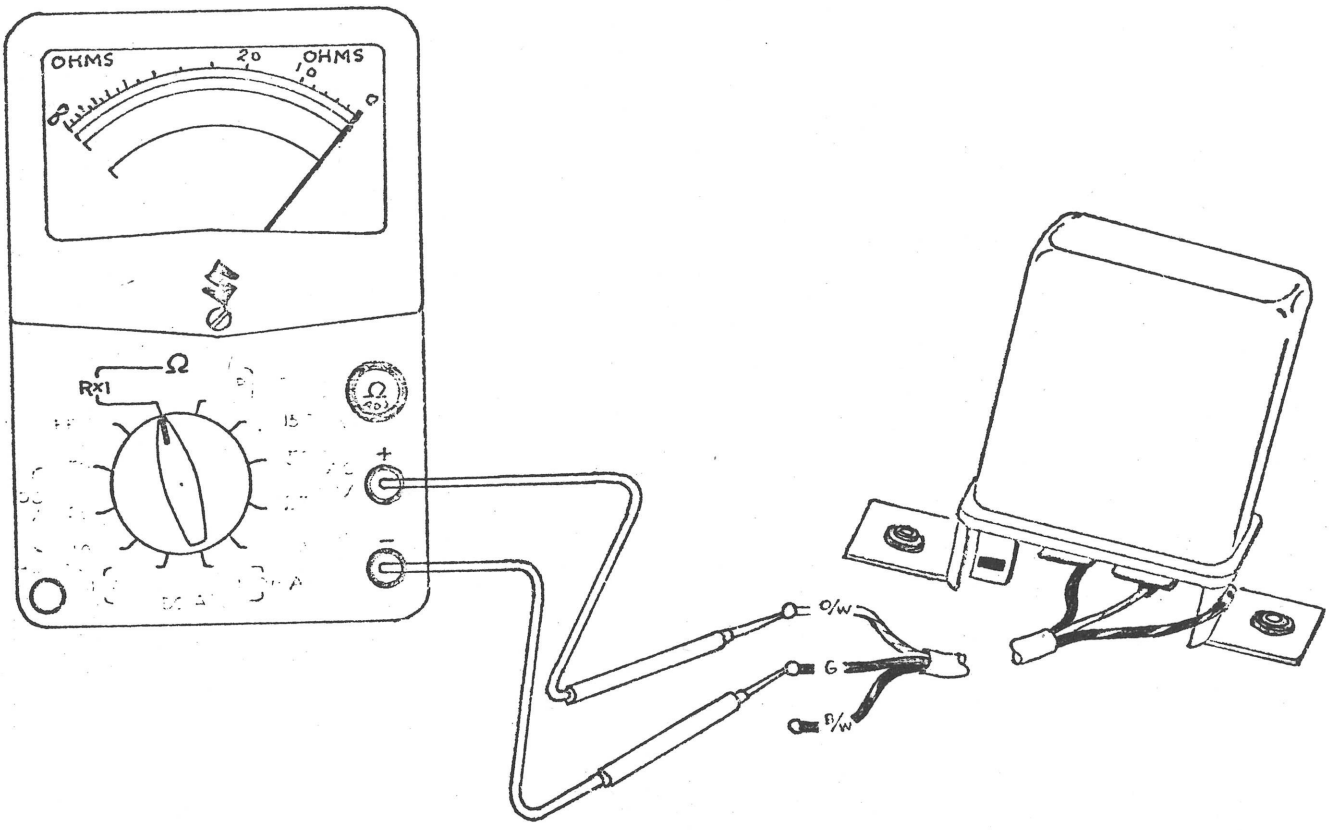
3. Connect the red (positive) lead of the pocket-tester to the orange/white wire in the regulator plug receptacle. The reading should be 95.0 ± 5 ohms resistance.

4. With the black (negative) lead still connected to the black/white wire, connect the red (positive) lead of the pocket-tester to the green wire in the regulator plug receptacle. The reading should be 95.0 ± 5 ohms resistance.

5. With the red (positive) lead of the pocket-tester still connected to the green wire in the regulator plug receptacle, connect the black (negative) lead of the pocket-tester to the orange/white wire in the regulator plug receptacle. The reading should be 0.0 ohms resistance.

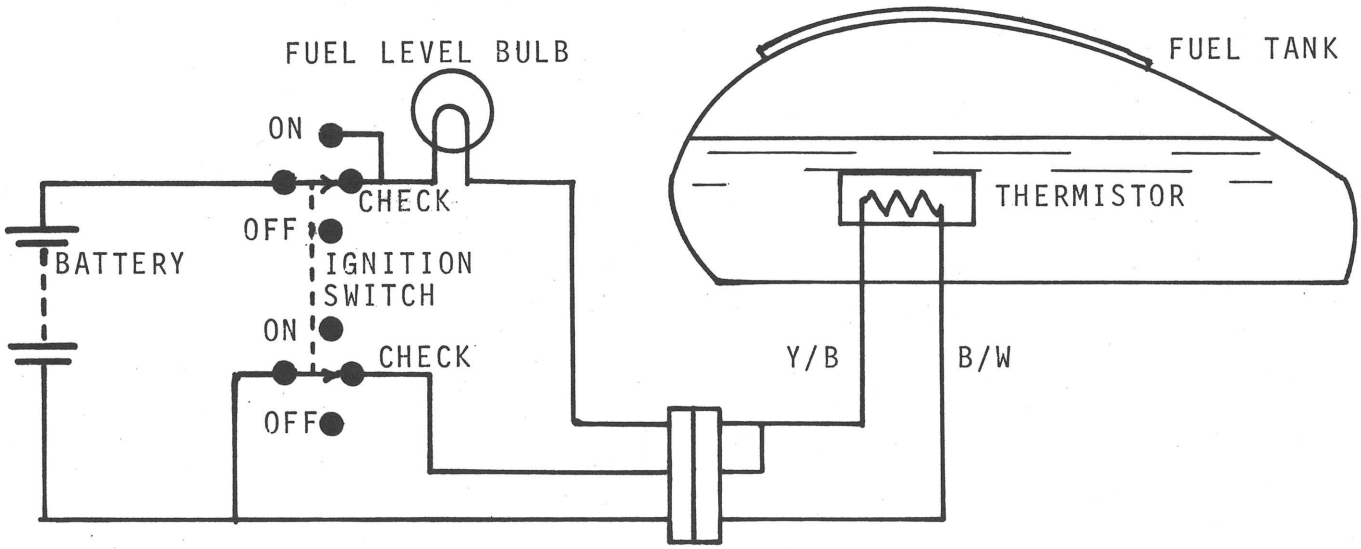
VOLTAGE REGULATOR
(Bench Check)





PART V
BENCH CHECK OF ACCESSORIES

FUEL LEVEL (THERMISTOR) CIRCUIT



FUEL TANK LEVEL (THERMISTOR) SWITCH
(Optional Bench Check)

1. For this test you need a continuity light and battery. Connect the fuel level switch and the continuity light in a series connection with the battery as follows:

   (a) Connect one of the continuity light leads to the battery positive terminal.

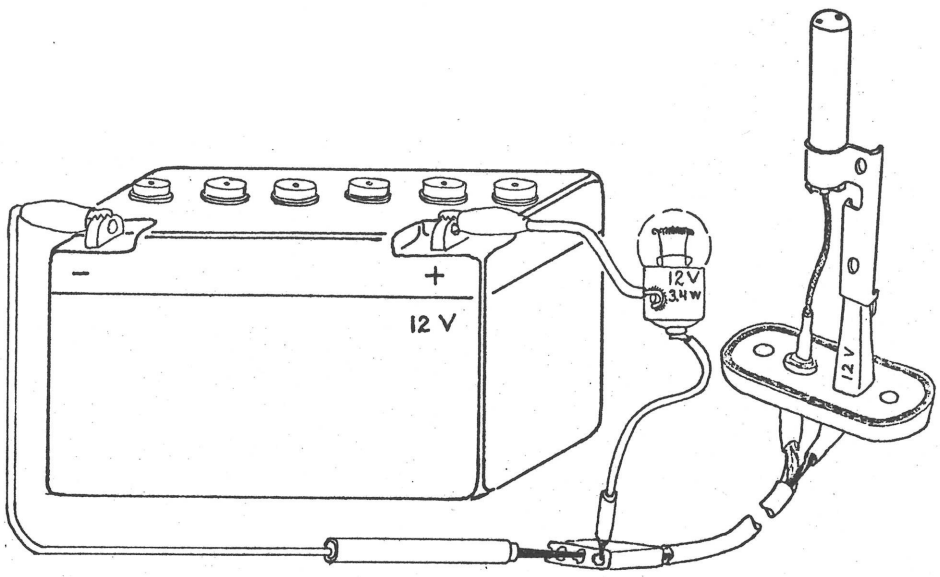
   (b) Connect the other continuity light lead to either of the yellow/black wires in the switch receptacle plug.

   (c) Connect the black/white wire in the switch plug to the battery negative terminal.

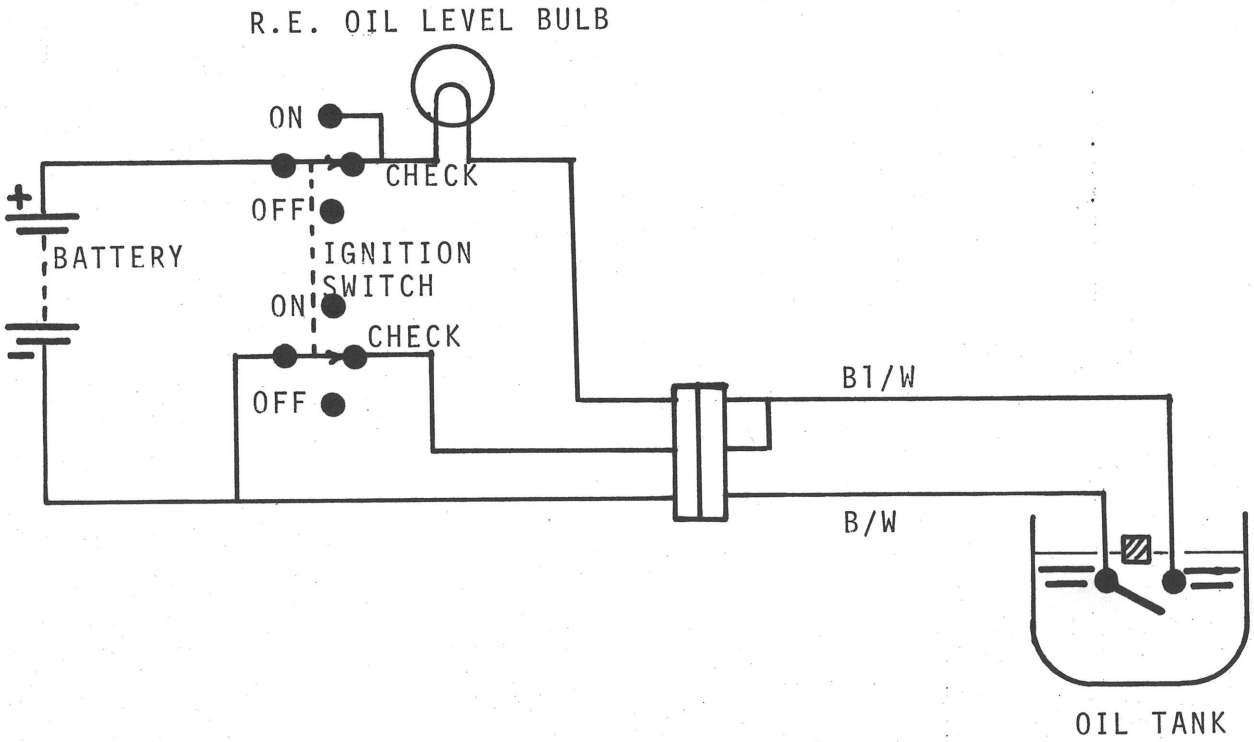
   When the circuit is connected correctly the light should go <u>on</u>.

   When the light is <u>on</u> immerse the switch thermistor into cold water and the light should go <u>out</u>.

   Lift switch thermistor out of the water and wait a few seconds and the light should go on again.



OIL TANK LEVEL (MAGNETIC) SWITCH
(Bench Check)



OIL TANK LEVEL (MAGNETIC) SWITCH
(Bench Check)

1. For this test take a pocket-tester and set it to the R X 1 position of the ohm scale.

   NOTE: BE SURE TO ZERO THE POCKET-TESTER

2. Take the pocket-tester black (negative) lead and connect it to the black/white wire in the switch plug receptacle.

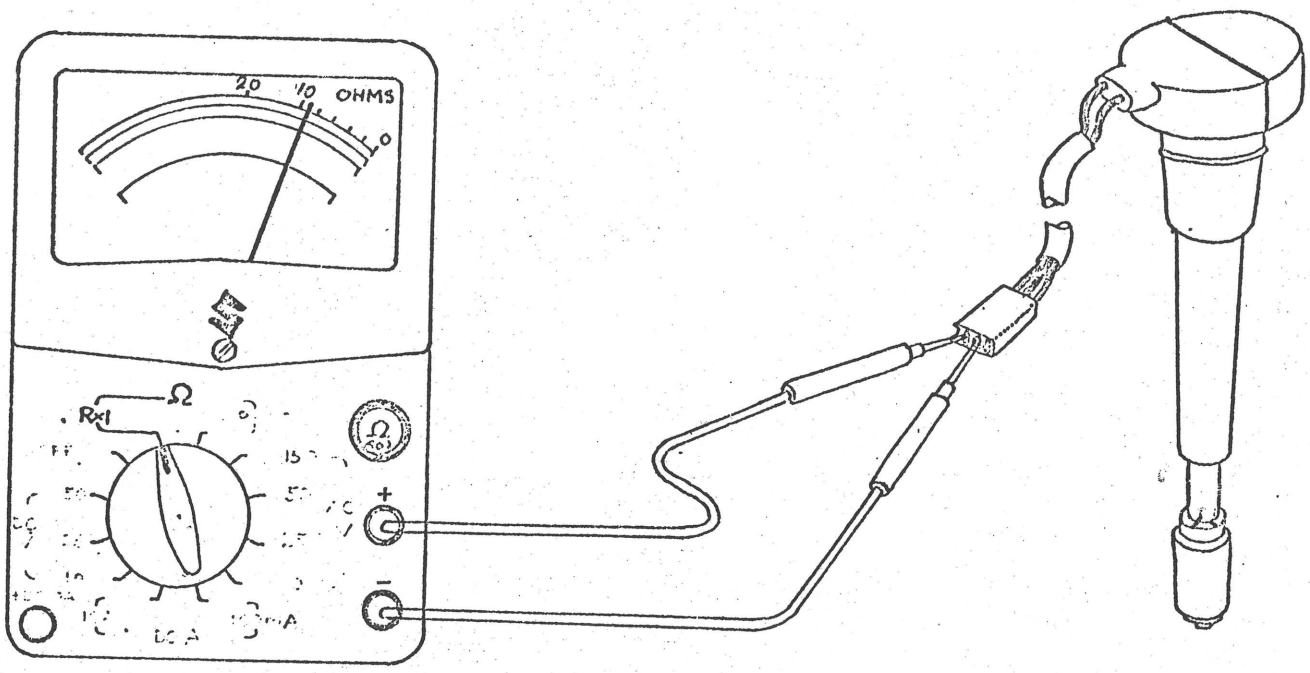
3. At the same time connect the pocket-tester red (positive) lead to either of the blue/white wires in the switch plug receptacle.

4. With the pocket-tester leads in place, take your free hand and move switch magnet to the down position. The reading on the pocket-tester should be as follows:

   Blue/White #1 to Black/White 9.0 ± 1 ohms resistance

   Blue/White #2 to Black/White 9.0 ± 1 ohms resistance

   Blue/White #1 to Blue/White #2 0.0 ohms resistance



INSTRUMENT PANEL VOLTAGE REGULATOR
(Bench Check)

1. For this test you will need a 12V battery, a 100 ohm resistor, and a pocket-tester. Set the pocket-tester to the 10 volt D.C. position of the D.C. volt scale.

2. Connect the red (positive) lead of the pocket-tester to the short yellow wire of the panel voltage regulator.

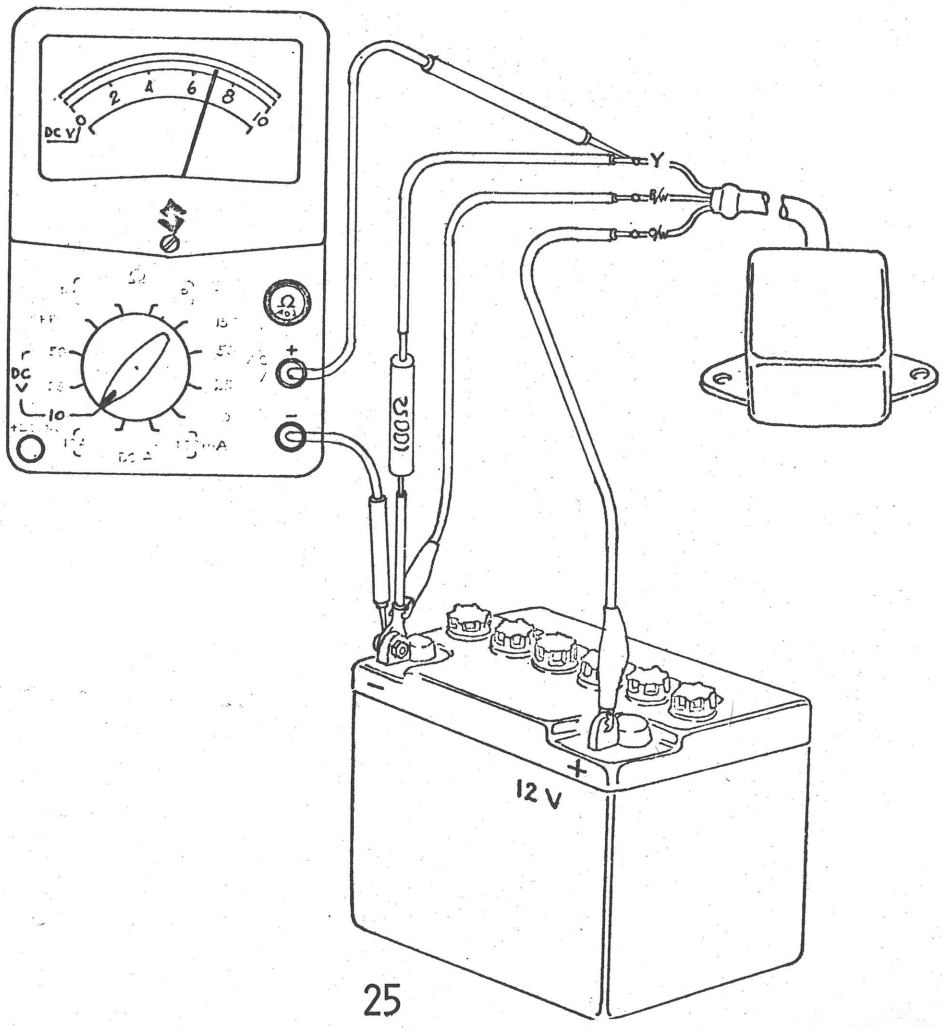
3. Connect one end of the 100.0 ohm resistor to short yellow wire of the panel voltage regulator. Connect the other end of the 100.0 ohm resistor to the battery negative terminal.

4. Connect the black (negative) lead of pocket-tester to the battery negative terminal.

5. Connect the black/white wire in the panel voltage regulator plug receptacle to the battery negative terminal.

6. Connect the orange/white in the panel voltage regulator plug receptacle to the battery positive terminal.

7. If the circuit is correct the reading on the pocket-tester should be 7.0 ± .1 volt D.C.



TEMPERATURE GAUGE
(Bench Check)

1. For this test you will need a pocket-tester, a rheostat or variable ohm resistor, and a 12V battery.

2. Take the pocket-tester and set it to the R X 1 position of the ohm scale.

   NOTE: BE SURE TO ZERO THE POCKET-TESTER

3. Connect one wire of the rheostat to the pocket-tester red (positive) lead and connect the remaining wire of the rheostat to the black (negative) lead of the pocket-tester.

4. Make a note of the position of the rheostat dial for the following resistance values by reading the pocket-tester. 95.0 ohms, 50.0 ohms, 30.0 ohms and 20.0 ohms.

5. After making note of the resistance values disconnect the rheostat from the pocket-tester and connect one wire of the rheostat to the black wire in the temperature gauge plug receptacle.

6. Connect the remaining wire of the rheostat to the battery negative terminal.

7. Connect the black/white wire in the gauge plug receptacle to the battery negative terminal.

8. Connect the orange wire in the gauge plug receptacle to the battery positive terminal.

9. The needle on the gauge face should point to the appropriate lines for the following resistance values.

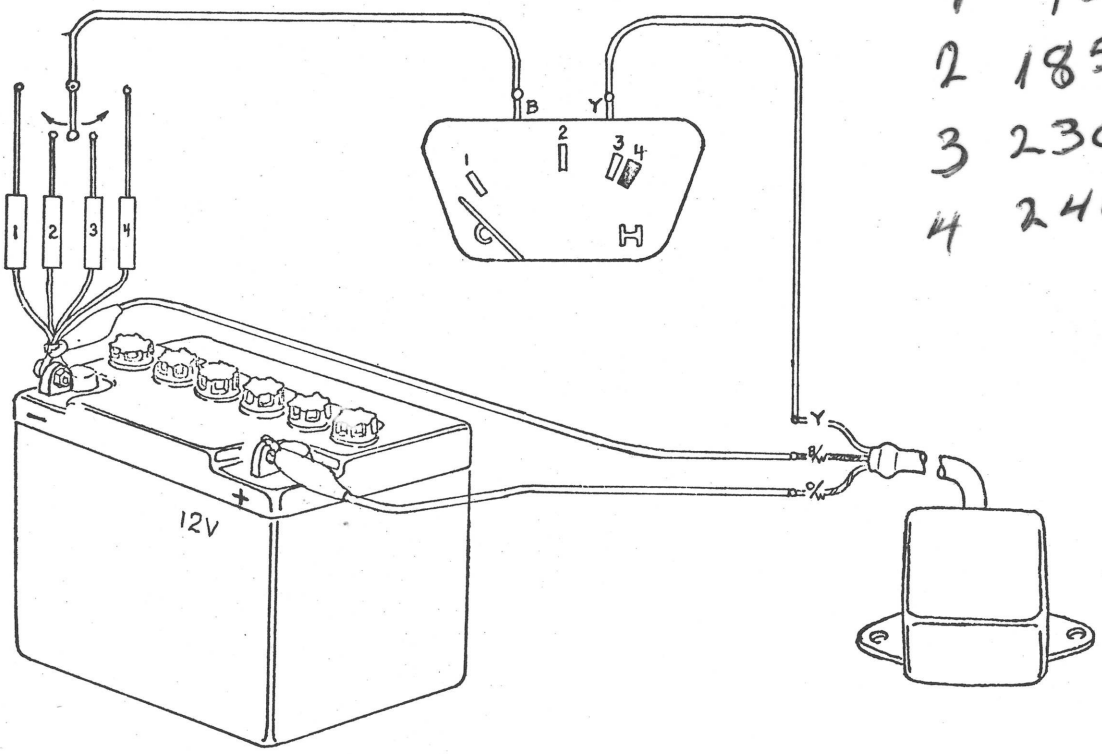
   95.0 ± 10 ohms resistance = First line

   50.0 ± 10 ohms resistance = Second line

   30.0 ± 5 ohms resistance = Third line

   20.0 ± 5 ohms resistance = Not to exceed red limit of gauge

TEMPERATURE GAUGE
(Bench Check)



1 95°
2 185°
3 230°
4 240°

HEAT SENSOR RESISTANCE
(Bench Check)

1. For this test you will need a pocket-tester, a thermometer (centigrade), a hot plate and a beaker of distilled water and Golden Cruiser anti-freeze (25-75 solution).

   NOTE: BE SURE ROOM IS WILL VENTILATED BECAUSE INHALATION OF THE FUMES MAY BE HARMFUL

2. Set the pocket-tester to the R X 1 position of the ohm scale.

   NOTE: BE SURE TO ZERO THE POCKET-TESTER

3. Connect the black (negative) lead of the pocket-tester to the terminal of the heat sensor unit.

4. Connect the red (positive) lead of the pocket-tester to the sensor unit base.

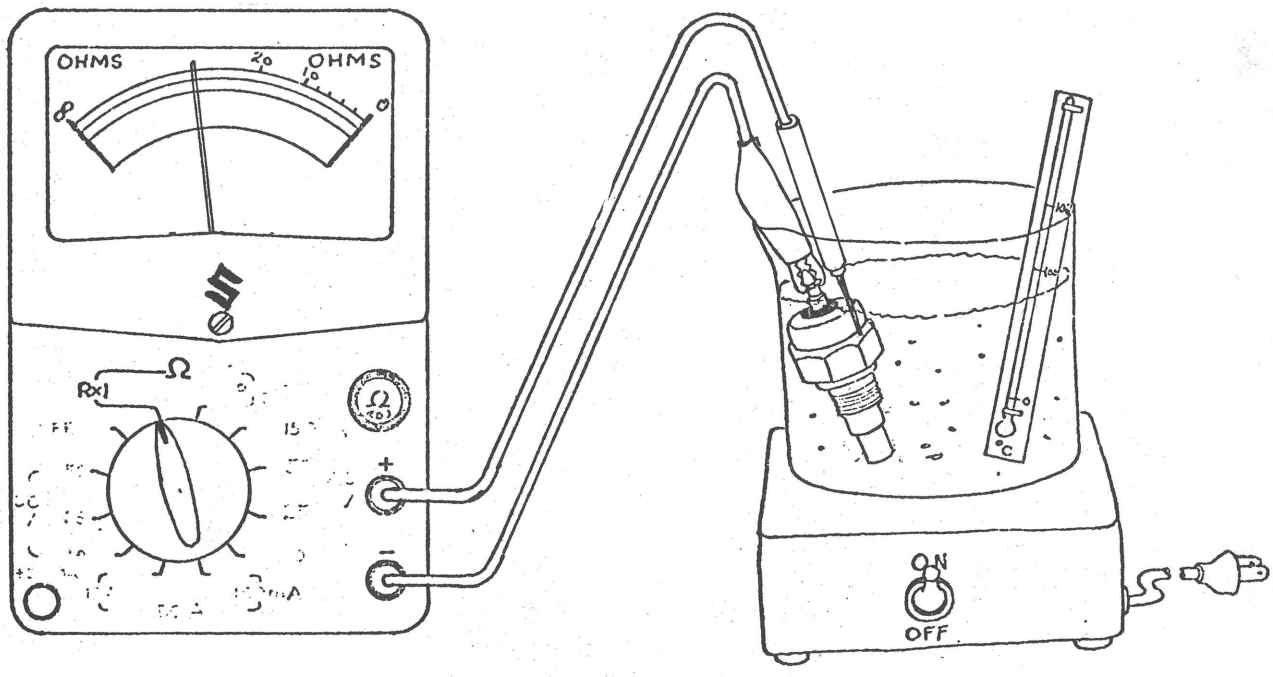
5. Place thermometer into solution of Golden Cruiser and water and put the beaker on the hot plate. Turn hot plate on.

   NOTE: DO NOT LET THE HEAT SENSOR OR THERMOMETER TOUCH THE BOTTOM OF THE BEAKER

6. Immerse the heat sensor unit, with the pocket-tester leads still attached into solution of Golden Cruiser and water. Watch both the thermometer and pocket-tester to see if both readings correspond to the following values:

122° 50° C = 150.0 ± 10 ohms
230° 110° C = 20.0 ± 5 ohms

185° 85° C = 40.0 ± 10 ohms
248° 120° C = 15.0 ± 5 ohms



COOLING SYSTEM FAN SWITCH
(Bench Check)

1. For this test you will need a pocket-tester, a hot plate, a thermometer (centrgrade) and a beaker of Golden Cruiser anti-freeze and distilled water (75-25 mixture)

   NOTE: BE SURE ROOM IS WELL VENTILATED BECAUSE INHALATION OF THE FUMES MAY BE HARMFUL

   In 222°
   Out 212°

2. Set the pocket-tester to the R X 1 position of the ohm scale.

   NOTE: BE SURE TO ZERO THE POCKET-TESTER

3. Connect the red (positive) lead of the pocket-tester to either fan switch terminal.

4. Connect the black (negative) lead of the pocket-tester to the remaining fan switch terminal.

5. Set the beaker of anti-freeze and water on the hot plate. Place the thermometer into the beaker.

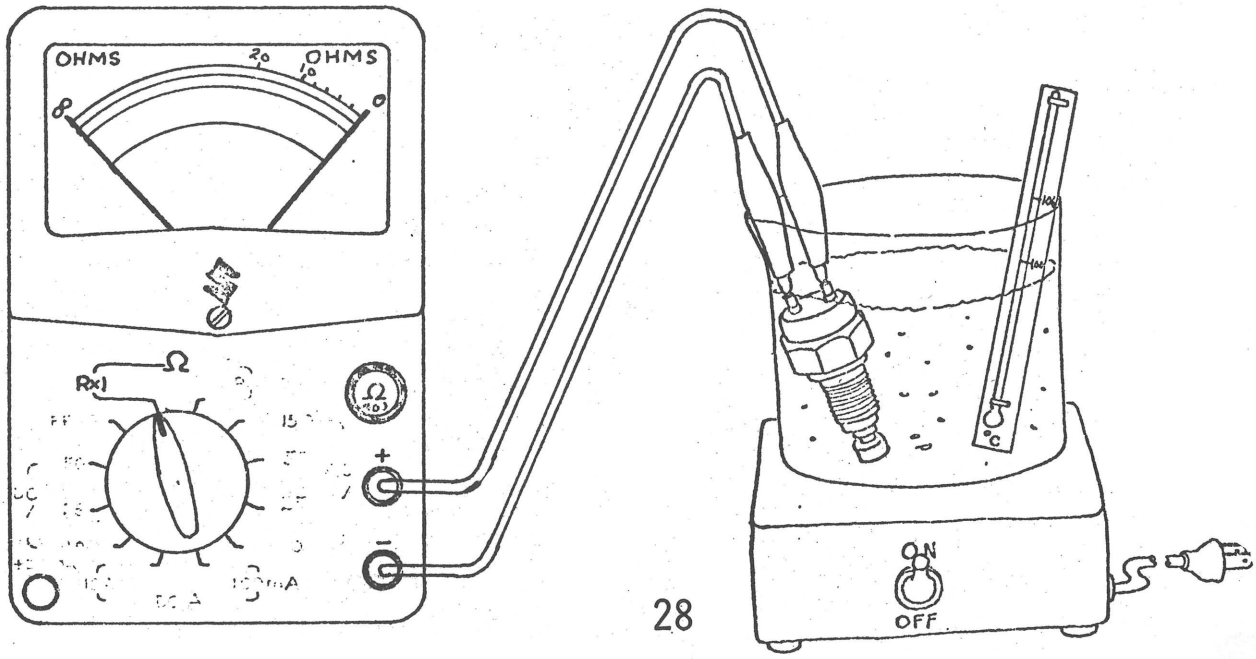
6. Turn on the hot plate.

   NOTE: DO NOT LET THE THERMO-SWITCH OR THE THERMOMETER TOUCH THE BOTTOM OF THE BEAKER

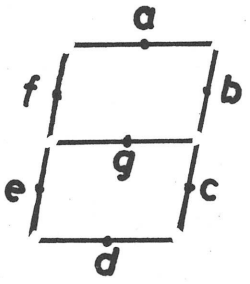
7. Immerse the fan switch unit, with the pocket-tester leads still attached into the solution.

8. When the temperature of the solution reaches 106° C the reading on the pocket-tester should be 0.0 ohms resistance.

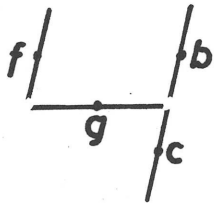
9. When the temperature is reduced to 100° C the reading on the pocket-tester should change to infinite ohms resistance.



GEAR POSITION INDICATOR CIRCUIT



A.



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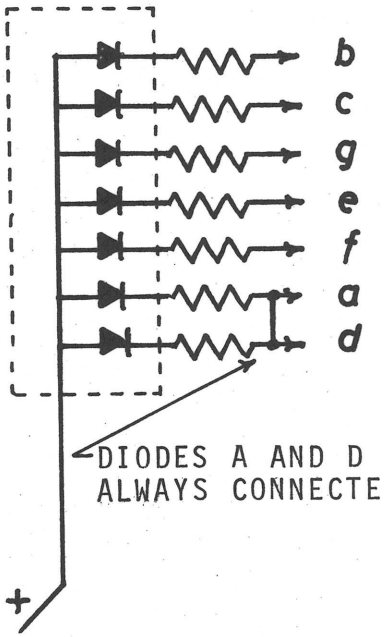
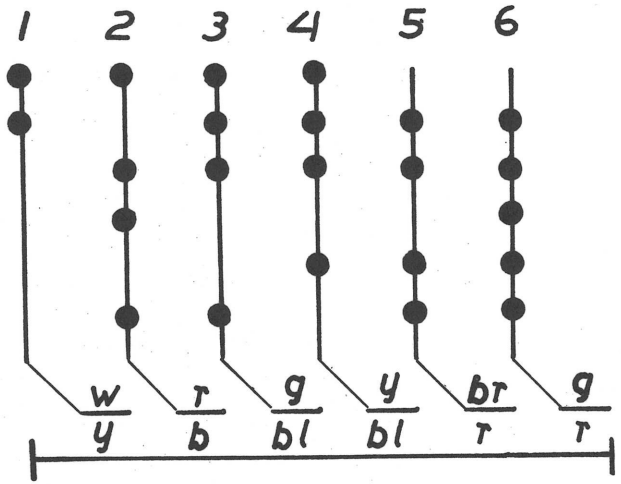




GEAR INDICATOR SWITCH COLORS

A. THE INDICATOR BULB IS MADE UP OF SEVEN SETS OF THREE DIODES.

B. FOR EXAMPLE: THE NUMBER FOUR USES 12 DIODES; F,G, B AND C.

THIS SYMBOL REPRESENTS THREE DIODES

GEAR POSITION SWITCH AND INDICATOR
(Bench Check)

1. For this test take your pocket-tester and set it to the R X 1 position of the ohm scale.

   NOTE: BE SURE TO ZERO THE POCKET-TESTER

2. Connect the black (negative) lead of the pocket-tester to the ground lead of the indicator switch.

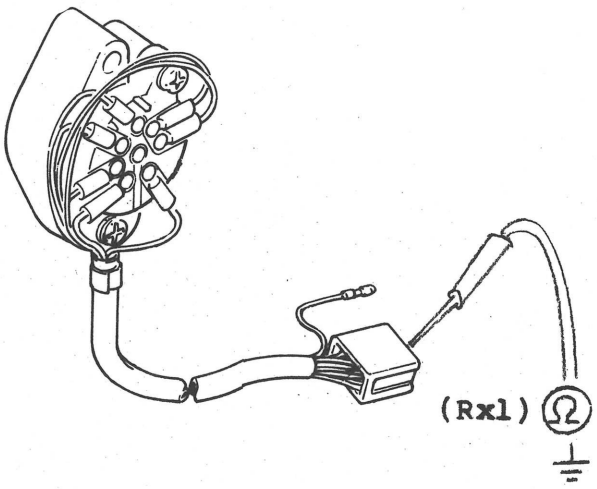
3. Connect the red (positive) lead of the pocket-tester to each of the wires in the indicator switch plug receptacle.

4. While touching the pocket-tester lead to the appropriate wire in the indicator switch plug receptacle, turn the switch with your free hand.

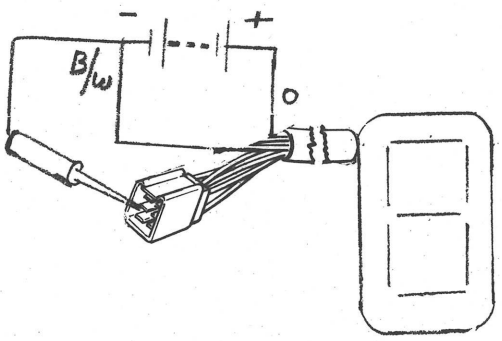
5. When the switch is in the correct position for the gear you are checking, the pocket-tester will read zero ohms resistance.

6. To check the indicator light in the instrument panel connect the orange wire (orange, black, green, black/white wire receptacle) to the battery positive terminal. Connect the black/white wire to the battery negative terminal. Connect each wire one at a time, in the adjacent plug receptacle to the battery negative terminal. Try all combinations until every number from one to five are observed in the indicator window.

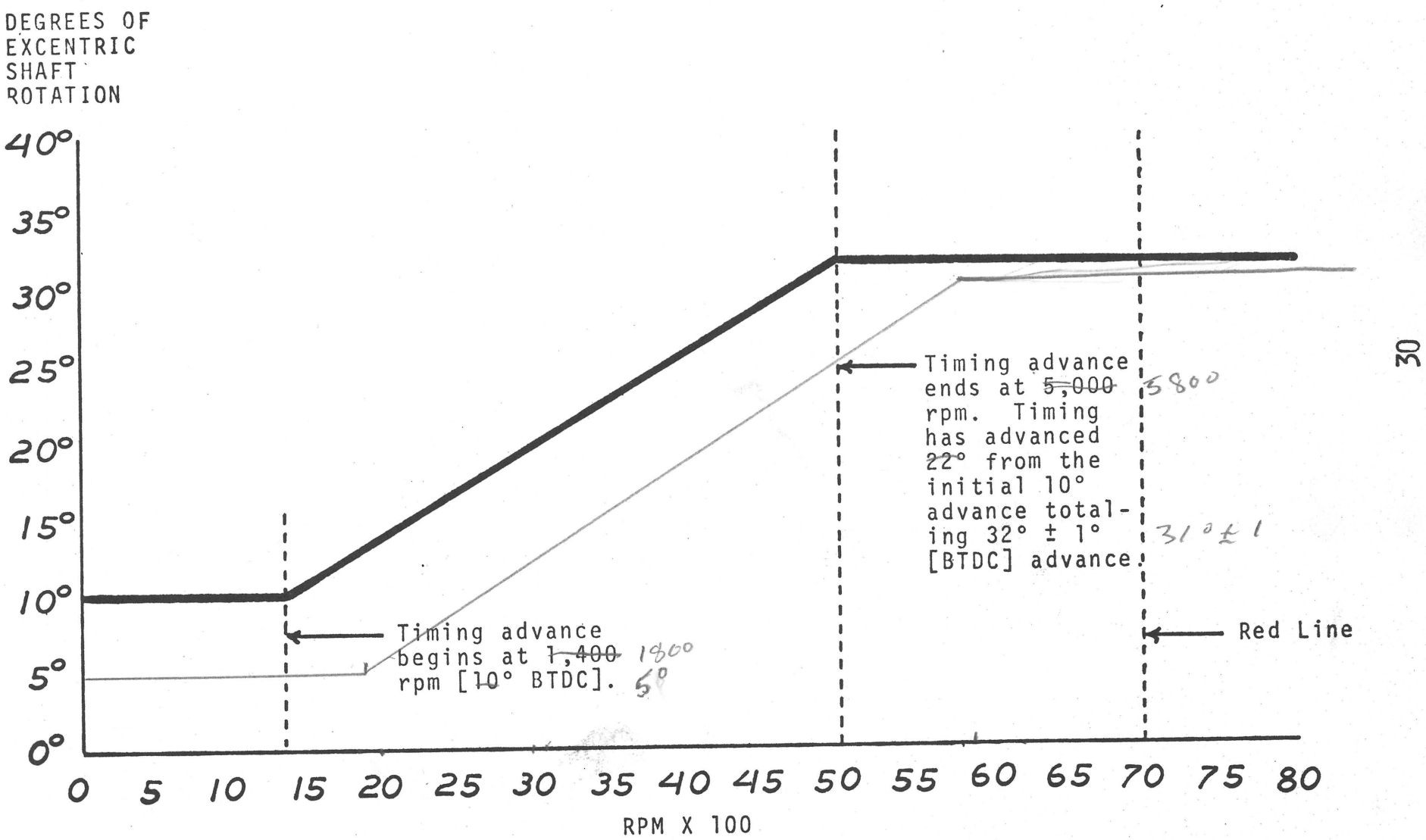
SWITCH



INDICATOR



RE-5 TIMING CURVE


DEGREES OF EXCENTRIC SHAFT ROTATION
40°
35°
30°
25°
20°
15°
10°
5°
0°
0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80
RPM X 100
Timing advance begins at ~~1,400~~ 1800 rpm [~~10~~° BTDC]. 5°
Timing advance ends at ~~5,000~~ 5800 rpm. Timing has advanced ~~22~~° from the initial 10° advance totaling 32° ± 1° [BTDC] advance. 31° ± 1
Red Line

OIL PRESSURE CHECK

1. Disconnect the oil pressure sending unit wire and remove the sending unit from the oil pressure regulator casting.

2. Install the oil pressure gauge adaptor fitting into the oil pressure regulator casting. NOTE: Install adaptor fitting snugly but do not over tighten because you will damage the oil pressure regulator casting.

3. Connect the oil pressure gauge to the adaptor you have just installed into the casting.

4. Secure the oil pressure gauge face to the crash bar of the motorcycle with the clamp on the gauge face.

5. Start the bike and read the oil pressure for the following R.P.M.'s

AV +— .5

(a)	1,500 RPM	4.6	(e)	3,500 RPM	6.5
(b)	2,000 RPM	5.2	(f)	4,000 RPM	6.7
(c)	2,500 RPM	5.7	(g)	4,500 RPM	6.8
(d)	3,000 RPM	6.2	(h)	5,000 RPM	6.9

NOTE: WHEN RE-INSTALLING OIL PRESSURE SENDING UNIT, AGAIN, DO NOT OVER TIGHTEN BECAUSE YOU WILL DAMAGE OIL PRESSURE REGULATOR CASTING

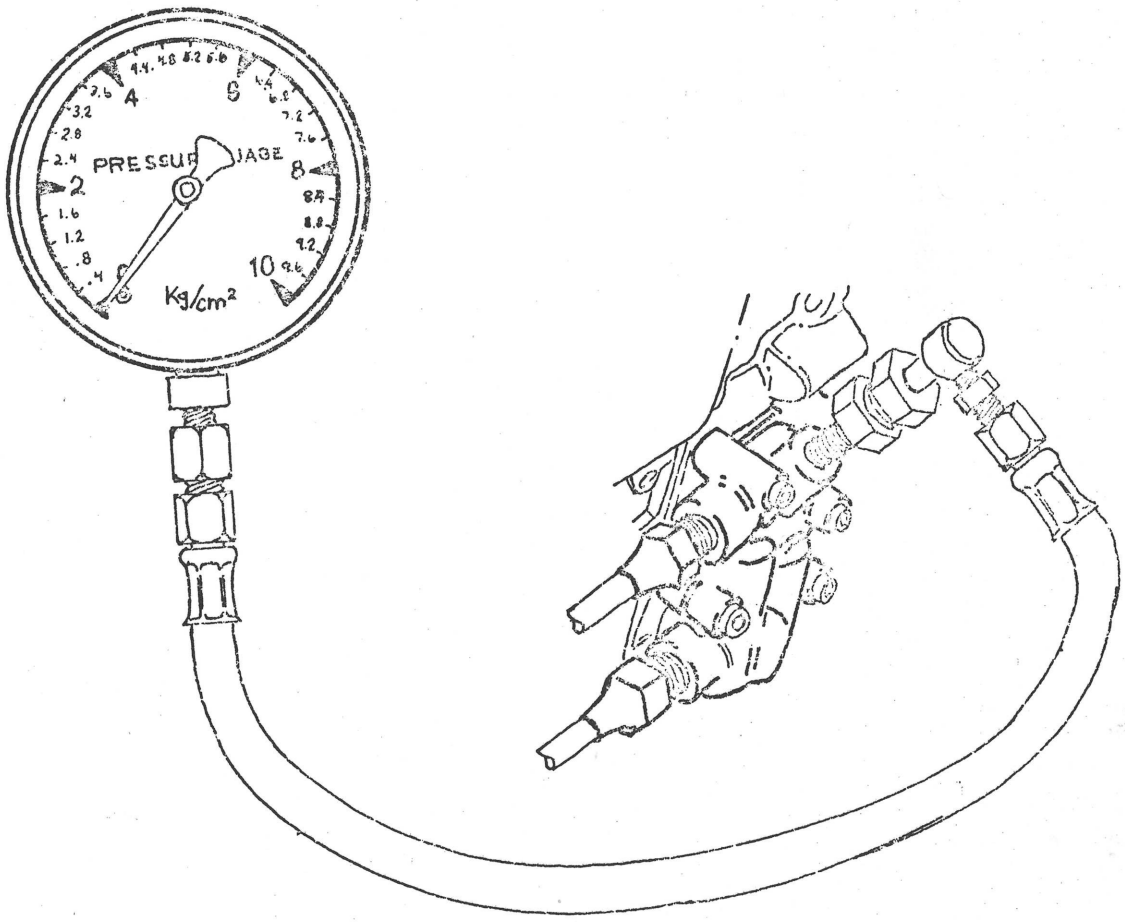
Run oil pressure - 176°

Oil must 1.5 1200 RPMS

Oil not over 8.7 at 7000 or Red Line

13.84 LBS/IN = 1 Kg/cm²

OIL PRESSURE CHECK



METERING OIL PUMP CHECK

1. Disconnect, from the metering pump, the oil line leading from the oil tank to the metering oil pump and plug the line to stop from dripping on to the floor.

2. Connect the metering vile line to the metering oil pump intake.

3. Connect the metering vile to the oil line and hang metering vile from the right handle bar.

4. Fill the metering vile with oil and bleed air from the line at the metering pump.

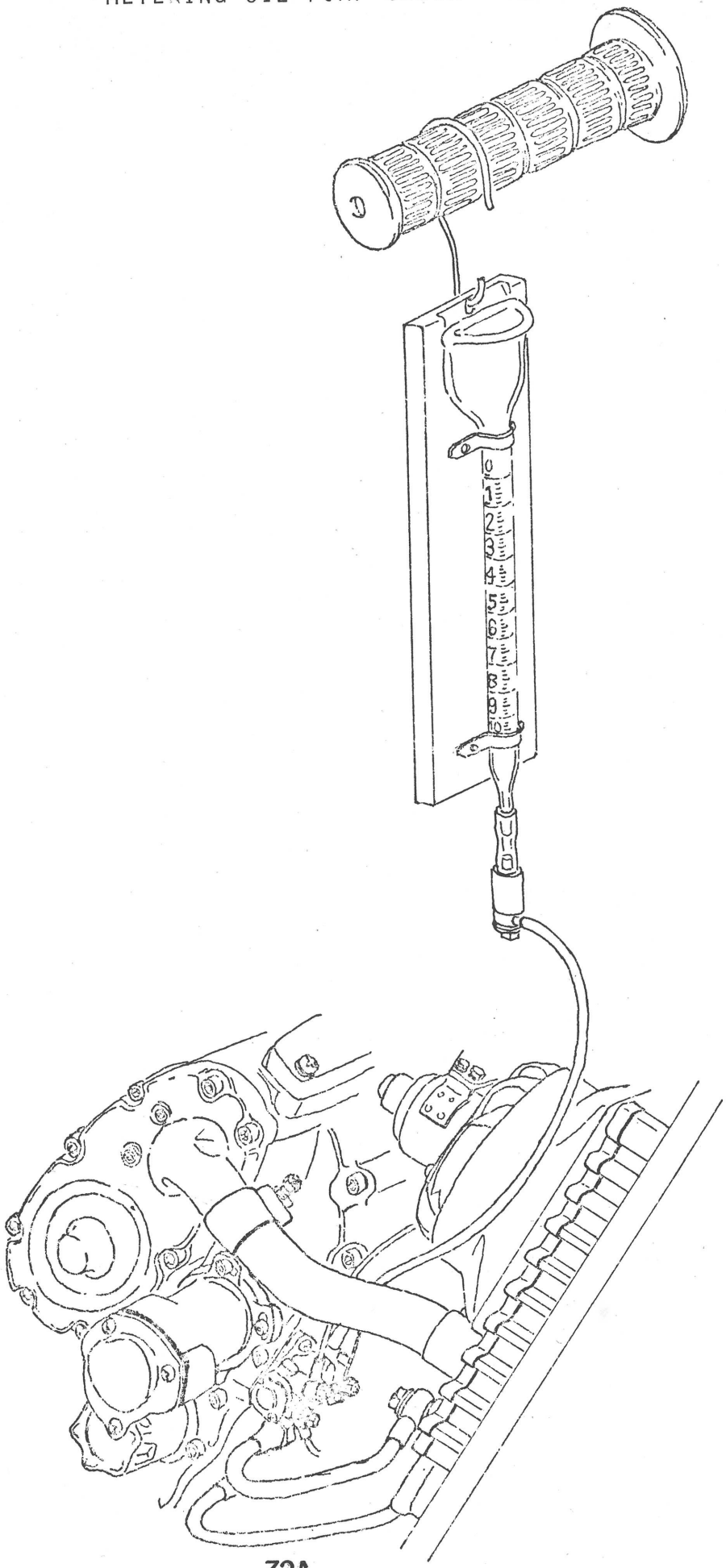
5. Start the motorcycle and set the idle to 2,000 RPM.

6. Take readings of the vile for the following running times.

2 minutes	2,000 RPM	1.7 cc
3 minutes	2,000 RPM	2.6
4 minutes	2,000 RPM	~~4.3~~ 3.5
5 minutes	2,000 RPM	4.3
6 minutes	2,000 RPM	5.1

Full open pump

METERING OIL PUMP CHECK



TROCHOID OIL PUMP MEASUREMENTS

1. To perform this check, disassemble oil pump from right side case with case removed from the motorcycle.

2. To get to oil pump trochoid, remove the nut from the large gear on the inside of the case.

3. Remove the four allen head screw holding the ignition point and advance assembly and remove the assembly from the housing.

   NOTE: BE SURE NOT TO DAMAGE THE "O" RING BETWEEN THE IGNITION ASSEMBLY AND OIL PUMP HOUSING

4. Measure the following for the correct clearances.

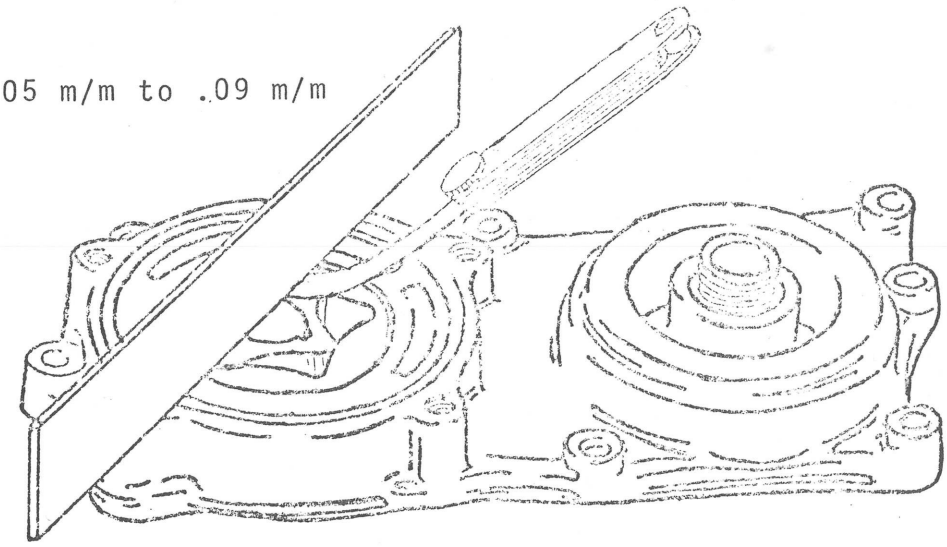
   (a) Tips of rotor to the inside of trochoid
   0.4 m/m to 0.14 m/m not to exceed 0.20 m/m

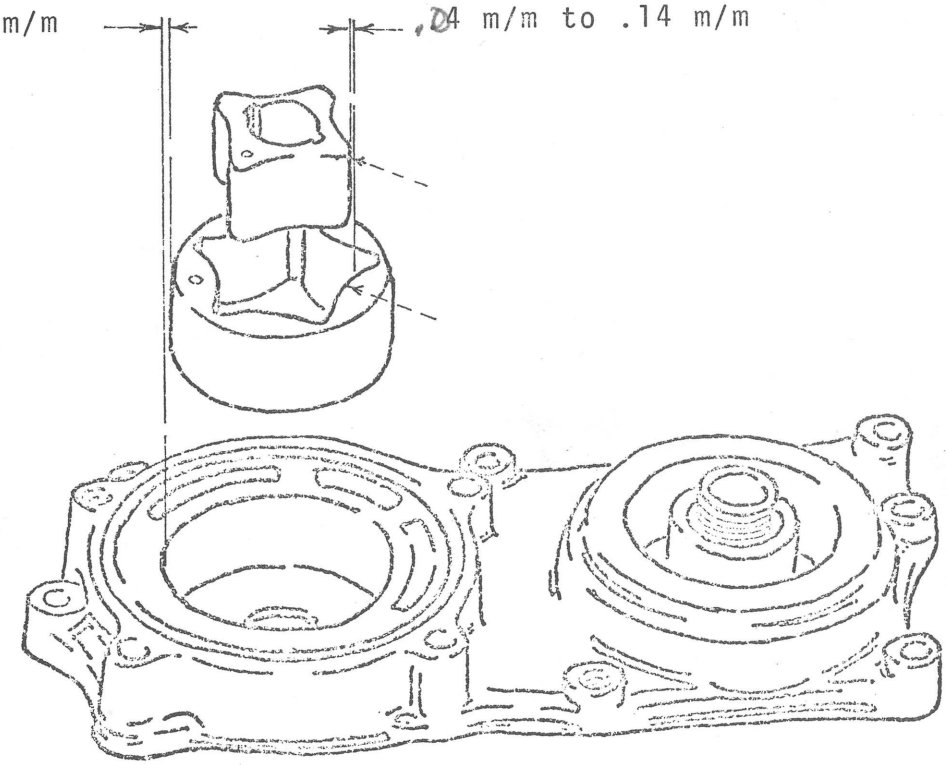
   (b) Outside of trochoid to housing
   0.05 m/m to 0.10 m/m not to exceed 0.15 m/m

   (c) With a straight edge across the top of the pump measure the clearance between the rotor and the straight edge.
   0.05 m/m to 0.09 m/m not to exceed 0.11 m/m

TROCHOID OIL PUMP MEASUREMENTS

.05 m/m to .09 m/m



.05 m/m to .10 m/m

.04 m/m to .14 m/m